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**Enterprise Social Networks
in the context of organizational development**

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Preface

For me, personally, science provides collective values and techniques to responsibly handle natural resources. In my view, by applying these values and techniques, a scientist is someone that helps to improve the situation of others.

I am very much interested in how things work and I love to get stuck in new challenging situations where I can learn the most from. Therefore, I am more than happy that Prof. Krcmar gave me the opportunity to join the chair for Information Systems at the Technical University of Munich as a doctoral candidate.

I gained huge respect of good scientific craft during the last five years and I am very grateful that I was allowed to learn, to improve and to increase my understanding of how a university as well as how science contributes to social coexistence.

There are many challenges out there. Thus, we need smart people doing meaningful research to shape and develop a peaceful future. And we need universities to provide those people with the necessary education and open-minded environments to unfold their talents.

I would like to thank Andrea, Katharina, Franziska, Anja, Anastasia, Arnold, Thomas, Simon, Christina, Anna, Kathrin, Manuel and specifically my mentor Dr. Markus Böhm, for their support, time and willingness to discuss. Many thanks also to Michael, Max, David, Kai, Florian, Maren, Jörg, Tobias, Christoph P., Christoph K., Sebastian, Andreas and Harald for just being around and helping out when needed.

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Abstract

This thesis presents novel, comprehensive and meaningful insights on the impact of Enterprise Social Networks (ESN) on organizations. Based on a mixed method research approach, we create conceptual clarity, identify and explain archetypes of ESN users, quantify the value contribution of ESN use, investigate impacts of social communication on executives and craft a change management curriculum. We contribute to the theory of adoption, diffusion and value contribution of ESNs. For practice, we provide foundations, guidelines and instruments of ESN governance.

Problem Statement: Enterprise Social Networks (ESNs) are introduced as powerful and comprehensive communication and collaboration platforms. Literature identified various positive effects of ESN use, such as improved communication and knowledge transfer. However, ESN adoption and ESN utilization-intensity develops slowly, and there are only a few well-grounded approaches to understand ESN usage. The relationship between ESN use and its value contribution is not clear and organizations struggle to benefit from their investments on ESNs. This thesis addresses five major challenges in the field of social information technology in organizations: (1) contributing to solve the ESN definition dilemma, (2) understanding adoption of ESNs by identifying archetypical users of ESN systems, how they value the ESN system they use, and what kind of obstacles they perceive, (3) quantifying the value contribution of ESNs, (4) understanding the role of leaders and leadership communication in ESNs, and (5) managing organizational change associated with ESNs.

Research Design: This thesis applies a mixed method approach comprising qualitative and quantitative research methods. First, we use a synthesized literature review to clarify what ESNs actually are. Second, we conduct a single case study comprising expert interviews (n=28) to identify drivers and obstacles of ESN adoption and diffusion. In addition, we apply the structuring content analysis to increase understanding of the different users within an ESN. Third, we conduct a two-factor field experiment (n=156) to quantify the value contribution of ESN use. Fourth, we conduct an online survey (n=55) to analyze how the perceived traits of an executive are affected, when a social communication style is used for employee communication. Fifth, we conduct a case study based on a structured literature review and in-depth interviews (n=7), analyzing the change process applied during the integration of two ESNs.

Results: This thesis presents various novel results helping to understand the impact of ESNs on organizations. First, we present an ESN framework that explains the technical and social entities of ESNs, an ESN interaction matrix outlining the relationships between those entities and a unified and clear

definition of what ESNs are. Second, we present a model to characterize ESN users and classify them into archetypical roles. Namely, these six archetypes of ESN users are: power users, limited users, reluctant users, repudiators, hidden champions, and question marks. Third, based on theory, we present a use-case-based instrument to measure the value contribution of ESNs. By applying this instrument, we achieved to quantify task efficiency for tasks, typically performed by knowledge workers. Our results provide strong evidence that ESN use positively influences employees' task efficiency. Fourth, we show that perceived traits of an executive were largely affected adversely when a social communication style is used for employee communication. Fifth, we present a critical review of change management during the introduction of ESNs, a framework of successful change management during the introduction of ESNs as well as an instrument to manage change associated with the implementation of ESNs on an organizational as well as on an individual level.

Contribution: This thesis contributes to the body of knowledge around ESNs in several ways. Specifically, we contribute to three major fields of research: First, the field of value contribution, beneficial use-cases, and positive effects of ESN use. Second, the field of quantifying the value contribution of ESNs, which is related to the research on appropriate and reliable performance measurement instruments. Third, this thesis contributes to research that addresses the adoption and diffusion of ESNs. Specifically, we contribute to research around individuals' motivation to use ESNs, their challenges and barriers of ESN use.

Study Limitations: Although we combine a qualitative and a quantitative research approach this thesis is limited in its generalizability. We paid special attention to mitigate the following two main threats to validity: (1) Results are generated from two large multinational organizations but are determined to provide industry independent and ESN independent theoretical and practical implications. (2) We partly use qualitative research methods. Thus, findings are obtained from the perceptions and opinions of the subjects and may be influenced by a "social desirability bias".

Future Research: Overall, this thesis provides important insights into the nature and key principles of ESNs. Nevertheless, the presented results require further investigation and confirmation. This specifically relates to the following questions: Do large investments and expectations toward an ESN pay off? What is the overall impact and overall value contribution of ESNs for an organization and how can the value contribution be quantified and measured? How to address archetypical users of ESNs during a change management process? How can the so-called "adoption paradox" (in which a company introduces an ESN, but the individual employee does not use it) be solved? With this thesis, we provide meaningful results and contribute to basic research to answer and address these future research questions.

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List of abbreviations

ADKAR	Acronym: awareness, desire, knowledge, ability, reinforcement
CEO	Chief executive officer
CM	Change management
CMBC	Computer mediated business communication
CMC	Computer mediated communication
COO	Chief operations officer
CSCW	Computer-supported cooperative work
EASI	Emotions as social information
ESN	Enterprise social network
GBU	Geographical business unit
GRD	Generational recipient determinism
IDT	Innovation diffusion theory
IS	Information system
ISR	Information system research
IoS	Impact of source
IPK	Fraunhofer Institut für Produktionsanlagen und Konstruktionstechnik
MM	Motivational Model
MPCU	Model of PC utilization
MSM	Model of intervention for activating sustainable motivation
OD	Organizational Development
PC	Personal computer
RQ	Research question
TAM	Technology acceptance model
TPB	Theory of planned behavior
TRA	Theory of reasoned action
URL	Uniform resource locator
UTAUT	Unified theory of acceptance and use of technology
SCT	Social cognitive theory
SIP	Social information processing
VHB	Verband der Hochschullehrer für Betriebswirtschaft e.V. (German Academic Association for Business Research)

1 Introduction

1.1 Problem statement

Enterprise social networks (ESNs) receive increasing attention as well as fast dissemination, especially in large organizations (Ellison, Gibbs, & Weber, 2015; Leonardi, Huysman, & Steinfield, 2013). Specifically, ESNs are internal web-based user centered social platforms that allow their users to communicate with colleagues; to identify potential communication partners; to create, publish, or edit their own content; and to access content created by other users (boyd & Ellison, 2007; Leonardi et al., 2013).

Personalized user profiles characterize ESNs as social platforms that link content and authors (Ellison et al., 2015). Previous research already identified positive effects of ESN usage. In particular, large multinational organizations will promote the introduction and development of ESNs in the future (Ellison et al., 2015).

In the context of organizational development, this doctoral thesis addresses the effects of Enterprise Social Networks (ESNs) on organizations in order to better understand how organizations can or cannot benefit from implementing ESNs. There is an urgent need for examining this field of organizational development, as organizations today more than ever face the vital question how to generate and distribute business relevant information efficiently within today's dynamic, decentral, virtual and project-driven work environments (Strother et al. 2012).

The phenomenon of ESNs is specifically important, as most prevalent communication solutions such as email or intranet information sites rather lead to information overload than to oblige the rising demand for a performant access, generation and exchange of business relevant information (Sobotta & Hummel, 2015; Verdoot, Christophe, Toubiana, & Beauvais, 2011). Here, ESNs seem to be a fast and flexible alternative to prevalent information and communication systems, such as email, and capable to lift information sharing and collaboration of organizations to the required level of performance. A very prominent example is Atos, a multinational IT service provider with more than 100.000 employees that aims to eliminate internal emails and shift internal communication to an ESN.

“We are producing data on a massive scale that is fast polluting our working environments and also encroaching into our personal lives. At Atos we are taking action now to reverse this trend, just as organisations took measures to reduce environmental pollution after the industrial revolution”—Thierry Breton, 2011 (Atos, 2017b)

With this statement, former Atos Chairman and CEO Thierry Breton announced the so-called Zero Email initiative in 2011 with the ambitious goal of eliminating all internal emails at Atos within the next three years (Atos, 2013).

Overall, ESNs are introduced as powerful communication platforms with complex effects on organizations. This thesis presents important insights how to plan, evaluate, integrate and manage ESN investments from a technical, financial, operational and change management point

of view. Thereby we provide important results in order to support individuals and organizations that use ESNs.

While studying ESNs and their impact on organizations, we were confronted with five fundamental challenges that are not finally solved by research: First, solving the ESN definition dilemma. Second, understanding the adoption and utilization intensity of ESNs by identifying archetypical ESN users, how they value the ESN system they use, and what kind of obstacles they perceive. Third, quantifying the value contribution of ESNs. Fourth, understanding the role of leaders and leadership communication in ESNs. Fifth, managing organizational change associated with ESNs.

Challenge 1: Defining what ESNs actually are. Overall, research proposed a variety of definitions of what ESNs are. Research such as those performed by Richter et al. (2011) and Turban et al. (2011), have consistently shown that ESNs consist of different components and affordances. However, during the literature review process, we found that there is not one clear nor one unified definition of what ESNs actually are. Despite their overlap in meaning and their low fit, ESN-alike terms are used to describe ESNs. For example, Raeth et al. (2011) describe ESNs as organizational social web sites (OSWS), while Kuegler et al. (2015) use enterprise social software platforms (ESSP). Leonardi et al. (2013) defines ESNs as enterprise social media (ESM), which was adopted also by other researchers such as Hacker 2017, Mäntymäki and Riemer 2016, Riemer et al. 2015, and Wehner et al. 2017. Furthermore, existing definitions do not include the latest technological features, e.g., voice or location based features, that new ESN solutions provide today (Unify, 2018). Today, neither the specific components of ESNs nor the way how they relate to each other are described in a congruent way. This circumstance creates a major issue for researchers. In the first place, this issue impedes researchers to reach the necessary level of transparency and comparability for their results when the object of research is ambivalent. In addition, the missing unified definition of what ESNs are increases initial efforts of researchers to orient themselves in the field of ESN research. Thus, a description of the emerging socio-technical phenomenon of ESNs that has not been conclusively explained yet, is presented. This thesis addresses this problem and explores the broad and complex definition of ESNs with the aim to present a framework that helps to describe ESNs and the context in which ESNs work.

Challenge 2: Understanding adoption of ESN by different groups or types of users. Investments in ESNs have increased rapidly in recent years (Ellison et al., 2015). As shown, previous research identified various positive effects of ESN usage, such as an improved communication across hierarchical and organizational boundaries (DiMicco et al. 2008; Zhang et al. 2010), an improved knowledge transfer and expert search (Bughin 2008; Fulk/Yuan 2013; Leonardi 2014; Mansour et al. 2011), an enhanced innovational strength (Hasan/Pfaff 2006; Leonardi 2014; Mäntymäki/Riemer 2014) as well as the establishment and strengthening of social ties (Jackson et al. 2007; Thom-Santelli et al. 2008). While organizations have adopted ESNs, the overall usage intensity of such systems remains rather low (Bughin, 2013). In addition, there are a few well-grounded approaches to understand ESN usage. With this thesis, we investigate “*what are the archetypical users of ESN systems,*” “*how users value the ESN system they use,*” and “*what kind of obstacles do the users perceive*” to increase understanding

of reasons for the actual system use or system non-use of ESN users. Although literature relevant for user typification exists, to the best of the authors' knowledge, there is no approach that combines individual and productivity related dimensions, which seem to be the decisive levers from a "what is in it for me"-perspective of ESN users. Overall, there is a lack of research on the archetypes of ESNs that includes the description, identification, and structuring of ESN users. This is a significant step to understand actual use and non-use of ESNs.

Challenge 3: Quantifying the value contribution of ESN use. ESNs are introduced as powerful and comprehensive communication and collaboration platforms. Literature identified numerous positive effects of ESN use (Leonardi, 2014; Mäntymäki & Riemer, 2014; C. Oettl, Berger, Böhm, Wiesche, & Krcmar, 2018). Overall, the utilization intensity of ESNs develops slowly (Bughin, 2013; Kiron, Palmer, Phillips, & Berkman, 2013; Li, Webber, & Cifuentes, 2012) and the value contribution of ESN use appears unclear and existing studies rely on perceived benefits and drawbacks of individuals instead of empirical findings (Herzog, Richter, Steinhüser, Hoppe, & Koch, 2014; C. Oettl et al., 2018). Overall, the relationship between ESN use and its value contribution is not clear. Previous research has established that the focus in research moves "from identifying benefits towards ways of quantifying benefits" of IS in general (Williams, Hausmann, Hardy, & Schubert, 2013) and thus in particular of ESNs. Kane et al. (2010) conclude regarding social media investments that: "[...] the return on investment remains stubbornly difficult to identify and quantify [...], and [...] how to measure the impact of social media remains elusive [...]". Therefore, we investigate "*how and why does ESN use create business value?*" More specifically, our research objectives are (1) to develop a measuring approach that links ESN use and business value and (2) to empirically investigate the relationship between ESN use and its business value contribution.

Challenge 4: Understanding the role of leaders and leadership communication in ESNs. The rise of social network communication with its inherent change in language (e.g. use of smileys, abbreviations and acronyms) as well as increased visibility and extended transparency of information (Treem & Leonardi, 2013) requires a thoughtful reflection of current communicational behavior of executives. Social media has changed the way individuals interact in private environment but also as professionals. Today, executives are expected to perform a competent and effective social communication in professional environments. New channels like enterprise social networks, instant messengers, blogs and wikis are induced into corporate "information system" (IS) landscapes and challenge the usually formal communicational behavior of executives. The most concise and tangible element of social communication are smileys, respectively emoticons. Literally, smileys are graphically represented emoticons, but typically both terms are used synonymously in practice. With the phenomenon of digital socialization, smileys also conquered corporate communication channels, and force executives to deal with new requirements and expectations even in classic work environments without e.g. enterprise social networks. Currently, there is only little research that addresses the impact of smileys in corporate communication on perceived interpersonal characteristics in a professional environment. The question, if and how the usage of smileys affects the perceived professionalism, authority, sympathy, competence and status of an executive, as well as the confidence in an executive environment is not investigated adequately yet. The addressed

research question is: “Does the usage of smileys in corporate communication affect the perceived characteristics of executives?”

Challenge 5: Managing organizational change associated with ESNs. ESNs receive increasing attention as well as fast dissemination, especially in large organizations (Ellison et al., 2015), (Leonardi et al., 2013). However, even if ESNs are implemented in organizations, their value contribution appears unclear and 80% of projects do not fulfill expectations (Mann, Austin, Drakos, Rozwell, & Walls, 2012). The typical ROI of any social technology becomes positive when 15% to 25% of employees use such technology extensively (Bughin, 2013) and companies should not assume that “If we build it, they will come” (Bughin, 2013). Organizations face serious challenges when implementing change on a large scale in complex environments. As a precondition, Change Management (CM) requires thorough planning and an execution attitude that consists of positivity and endurance. Overall, change became almost a daily occurrence and the power to change developed towards a measure of the success and the strengths of a company (Bughin, 2008). However, very little is known about how change management theories aid the implementation of ESNs yet. Therefore, we summarize existing change management theories and ask “how can these theories help to implement ESNs?” and “how to create interventions that effectively address the different archetypes of ESN users?”

1.2 Research questions

The main target of this thesis is to increase the understanding of the impact of ESNs on organizations by answering relevant research gaps in the field of organizational communication and collaboration and the value contribution of IS. Thereby, we aim to better understand if and how organizations can or cannot benefit from implementing ESNs. We, next, introduce the research questions (RQ) that structure this thesis. We address five major RQs within this thesis.

It is important to anchor research on a unified and broadly accepted definition of the research object. In order to approach a robust definition of ESNs, a literature review within the IS domain provides an overview on ESN and ESN-alike terms used in the field. Should literature not outline a standard definition of what an ESN is, out of which elements it consists and which characteristics and affordances it provides, a structuring analysis of extant definitions could provide the necessary building blocks for a unified definition of the term ESN.

RQ1: *How can the socio-technical phenomenon of ESNs be conclusively explained?*

Literature emphasizes technology acceptance models to explain IS use. In this context, the characteristics of IS users seem decisive as stated in several user typification concepts (Jahnke, 2010; Orlikowski, 1992; Rogers, 2003; Velasquez, Wash, Lampe, & Bjornrud, 2014). To better understand ESN usage and the reasons for the actual system use or system non-use, a case study seems promising to gain further insights.

RQ2: *What are the archetypical users of ESN systems,” “how users value the ESN system they use,” and “what kind of obstacles do the users perceive”?*

IS success is discussed in literature to comprise manifold areas of benefits for different stakeholders. Economic correlations of IS use, however remain unclear and ways to quantify

the value contribution of IS are missing. The theoretical development of a measurement instrument as well as its application in a field-experiment seems expedient to raise understanding on the value contribution of ESN use.

***RQ3:** How and why does ESN use create business value?*

Social media has changed the way individuals interact in their private environment but also as professionals. Hence, executives are expected to perform a competent and effective social communication in professional environments. Exemplarily, we think that the effect of smiley use by professionals should be investigated. An online survey might help to increase understanding of how the usage of smileys affects the perceived characteristics of executives.

***RQ4:** Does the usage of smileys affect the perceived characteristics of executives?*

In order to manage change successfully, organizations can rely on various theoretical models of Change Management. Theory provides a vast amount of change interventions that have a high value for successful Change Management. A literature review might help to identify relevant change management approaches. Expert interviews might help to emphasize and extend the identified change management theories to determine effective management practice for introducing ESNs.

***RQ5:** What is effective change management practice for introducing an ESN in a large organization?*

This thesis addresses the identified challenges by answering the introduced research questions. Table 1 provides an overview.

Challenges addressed in this thesis	RQ1	RQ2	RQ3	RQ4	RQ5
C1. Defining what ESNs actually are	•	•	•		
C2. Understanding adoption and utilization intensity of ESNs	•	•	•		•
C3. Quantifying the value contribution of ESN use	•	•	•		•
C4. The role of leaders and leadership communication in ESNs				•	•
C5. Managing organizational change associated with ESNs			•		•

C: Challenge; RQ: Research question; •: C addressed by RQ.

Table 1 Challenges addressed by research question
Source: Own illustration

1.3 Structure

This thesis is structured as follows: First, we present an introduction of the thesis comprising a description of the situation, the problem statement and the chosen research design.

Second, we introduce five major studies that were conducted in order to investigate the effects of ESNs on organizations. These five studies provide novel and relevant results which are structured and presented in the sections: State of the art on ESNs, The adoption and diffusion of ESNs, The value contribution of ESNs, The role of communicational behavior of executives in the age of ESNs, and Organizational change associated with ESNs.

Third, we conclude the results presented within this thesis, the limitations and contributions of this thesis as well as an outlook on future research.

1.3.1 Scientific lense and terminological guidance

To provide terminological guidance to the different gradations of “use”, we present in Figure 1 an overview of how diffusion, adoption, acceptance and utilization intensity are determined.

Conceptual clarity on ESN use

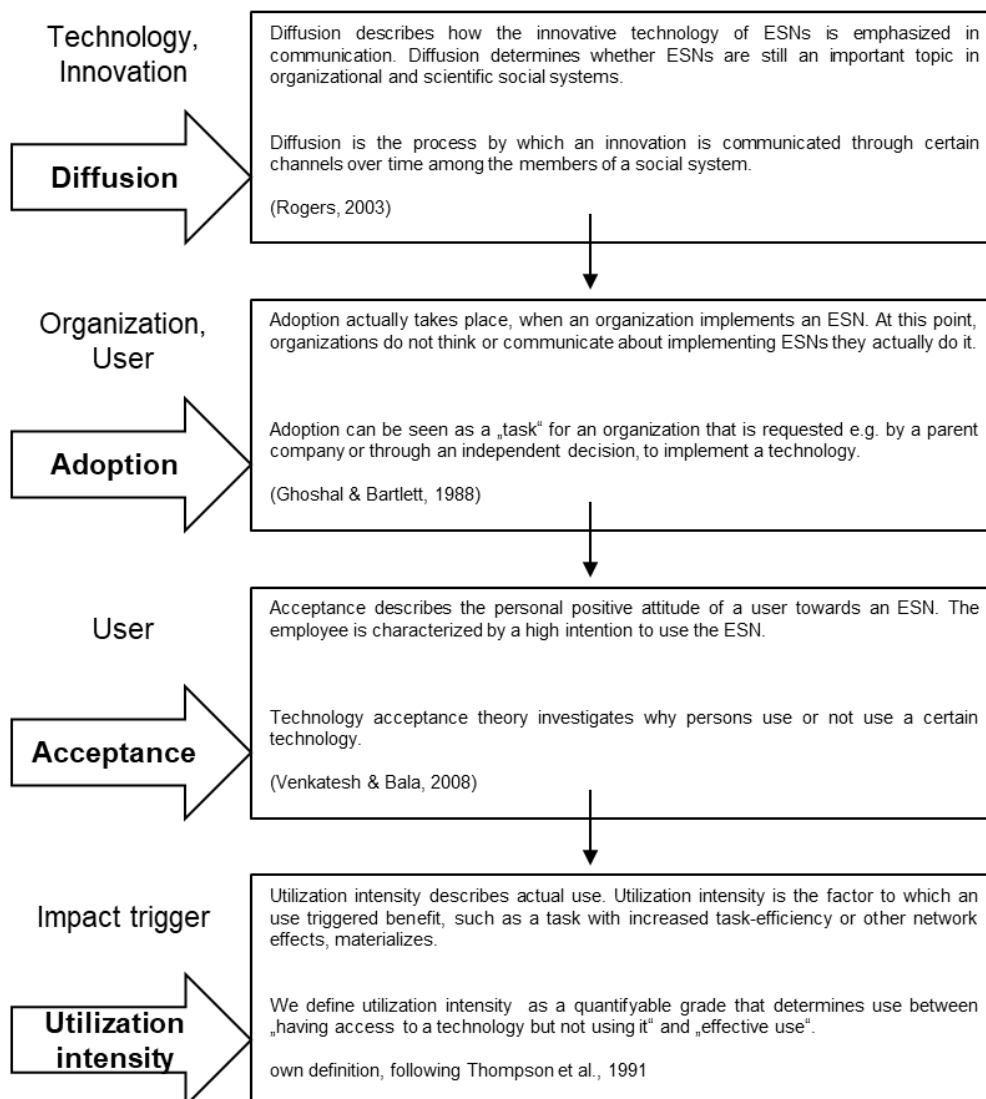


Figure 1 Conceptual clarity and terminological guidance on technology use
Source: Own illustration

We investigate ESNs to predict organizational development. It is the leader who decides to adopt an ESN to develop his/her organization. To be more specific, we study ESNs by observing the environment of a leader. A leader neither uses technology in the way employees are intended to use it nor is a leader a technical expert. However, he needs to take fundamental decisions.

With our overall study setup, we present a general starting point for organizational research which looks at problems from the angle of **what a leader needs to know to take an informed decision on whether and how to develop his/her organization by the introduction of a new technology?** We depict the scientific lens applied in Figure 2.

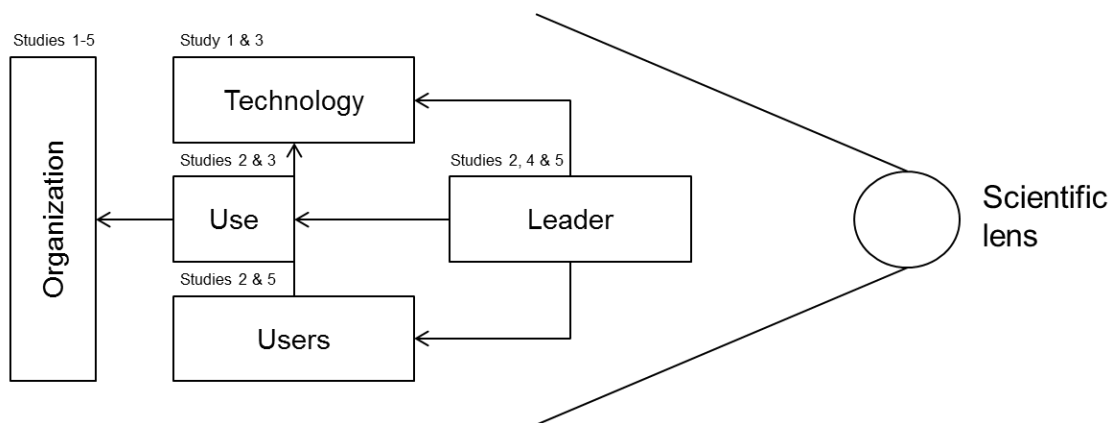


Figure 2 Overall scientific lens
Source: Own illustration

We address the building blocks of the scientific lens shown in Figure 2 as following: The **technology** related parts are specifically emphasized in study 1: *State of the art on ESNs* but also addressed in study 3: *The value contribution of ESNs*. All **users** related aspects are specifically addressed in study 2: *The adoption and diffusion of ESNs* but also investigated in study 5: *Organizational change associated with ESNs*. **Use** related research is specifically conducted in study 3: *The value contribution of ESNs* but also addressed within study 2: *The adoption and diffusion of ESNs*. All **leadership** related aspects are specifically investigated in study 4: *The role of communicational behavior of executives in the age of ESNs* and study 5: *Organizational change associated with ESNs*, but are also addressed in study 2: *The adoption and diffusion of ESNs*.

1.3.2 Thesis components

Within this section we explain the structure and the components of this thesis and introduce the studies it consists of shortly. We present an overview on the thesis structure in Figure 3.

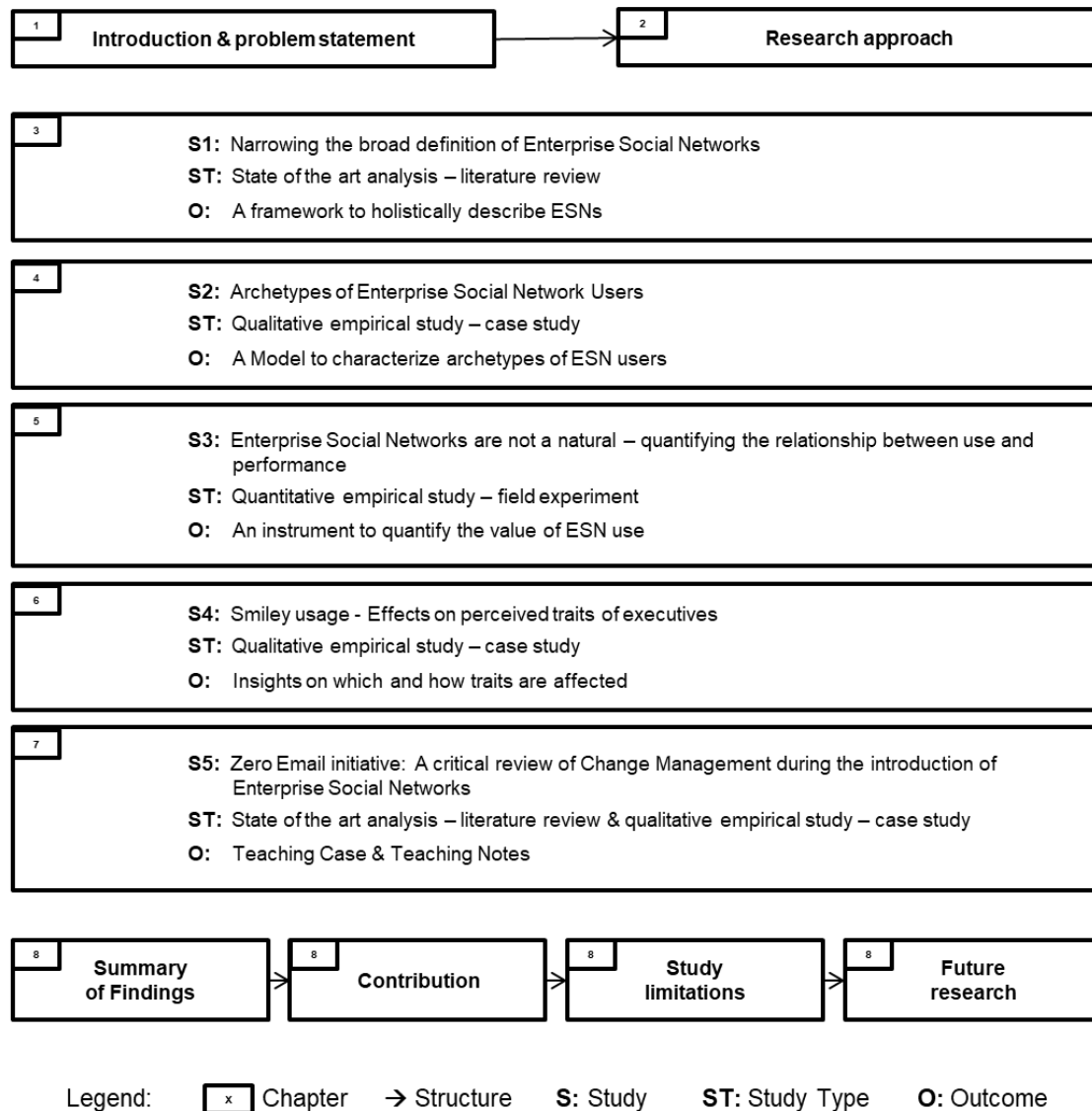


Figure 3 Thesis structure
Source: Own illustration

As shown in Figure 3, this thesis comprises five research studies. While S1, S3, and S4 have not been published, S2 has been discussed at the *Hawaii International Conference on System Sciences* 2018 and published in the corresponding conference proceedings and results of S5 have been partly published within the *Journal of Information Technology Teaching Cases* also in 2018. We present the details on the embedded publications in Table 2. Subsequently, we provide a short overview on each study and thereby introduce the research gap, the applied method, as well as its results and contribution to theory and practice.

Study 1: Narrowing the broad definition of Enterprise Social Networks. Enterprise Social Networks (ESNs) are introduced to increase the productivity of knowledge workers. However, a precise definition of ESNs has proved elusive. The importance and originality of this study is that it explores ESNs as a phenomenon that is much too complex to be phrased in a comprehensive definition. This is the first study to show that the definition of ESNs needs to be a framework to reflect the evolving socio-technical phenomenon of ESNs. The major result of this research is an ESN framework that organizes the affordances as well as the social and technical components of an ESN. In addition, we identified key characteristics of ESNs: openness, size, density, voluntariness and access. By applying the ESN framework, researchers increase the level of transparency, robustness and comparability of their results. Furthermore, the framework aids researchers to orient themselves in the field of ESN research.

Study 2: Archetypes of Enterprise Social Network Users. Investments in enterprise social networks (ESNs) have increased rapidly in recent years. However, an ESN utilization intensity develops slowly, and there are a few well-grounded approaches to understand ESN usage. To elaborate on different archetypes of ESN users, we conducted a case study that comprised 28 interviews within a large IT services company. We present a model to characterize ESN users and classify them as archetypes based on the following two dimensions: *individual openness to ESNs* and *perceived task-fit*. We determine six archetypes of ESN users, namely, power users, limited users, reluctant users, repudiators, hidden champions, and question marks. From a theoretical viewpoint, this study contributes to the discussion around user typology of ESN users and the utilization intensity, acceptance, and value contribution of ESNs. In practice, results provide an orientation to organizations that intend to address both ESN users and the organization to increase the utilization intensity of ESNs.

Study 3: Enterprise Social Networks are not a natural – quantifying the relationship between use and performance. Enterprise Social Networks (ESNs) are introduced as powerful and comprehensive communication and collaboration platforms. However, the relationship between ESN use and its value contribution is not clear. Our findings show that ESN experience is decisive to unleash a significant positive effect of ESN use on task efficiency. Surprisingly, our findings show that ESN experience outperforms interconnectedness as a key predictor for employee performance. This study appears to be the first substantial approach to quantify the value contribution of ESNs. These results contribute to existing theories involving value of ESNs and provide a novel approach for fact-based management of ESNs in practice.

Study 4: Smiley usage - Effects on perceived traits of executives. Due to the increasing spread of smileys as an integral part of company internal communication, the purpose of this study is to examine whether and how the use of smileys affects typical characteristics of leaders in companies. We conducted a survey among 55 subjects with distinctive work experience to investigate on how the perceived professionalism, authority, sympathy, competence and status of an executive, as well as the confidence in an executive is affected when smileys are used in emails to employees. In addition, current examples and studies will be presented to discuss the definitions, causes, challenges and effects of smiley usage. Overall, results show that the use of smileys affects the perceived characteristics of an executive predominantly adverse.

Furthermore, the number of smileys used, age and professional experience were found to strengthen or mitigate these effects.

Study 5: Zero Email initiative: A critical review of Change Management during the introduction of Enterprise Social Networks. How can a company successfully improve collaboration and teamwork with the introduction of new IT tools? This case offers new solutions to this question by reviewing two Change Management processes which took place over a period of 6 years within Atos' Zero Email initiative. The change processes of (1) replacing internal emails with an Enterprise Social Network (ESN) solution in 2012 and (2) replacing the introduced ESN solution by a second, enhanced ESN solution in 2016 are analyzed. By comparing them to established Change Management theories, important key factors of a change process can be highlighted and the evolution of Change Management within an innovative, multinational IT service provider is shown. The Teaching Case is accompanied by in-depth Teaching Notes where we craft a synthesized checklist for thorough Change Management that addresses IT adoption issues and mitigates the critic that theoretical models are too rigid for vivid organizations. In addition to this comprehensive "360°-analysis" consisting of personal interviews, inquiries on organizational communication and research on Change Management theory, the Innovation Diffusion Theory (including a reflection of recognized technology acceptance models) is used to explain possible deviations from the expected outcomes of ESN integration projects.

Table 2 provides an overview on those studies within this thesis that have been published (S2) or published partly (S5) in recognized outlets of IS research. The word-by-word, complete actual content from these publications is used within this thesis. Special chapters mark studies using that content (4.1 and 7.1). In addition, we present the exact take-over positions from content of these publications in the appendix section in chapter 10.1.1 and chapter 10.4.1.

No.	Authors	Title	Outlet	Type
S2	Oettl, Christian; Berger, Thomas; Böhm, Markus; Wiesche, Manuel; Krcmar, Helmut	Archetypes of Enterprise Social Network Users	HICSS 2018 (published)	CON (VHB: C)
S5	Oettl, Christian Albert; Beck, Katharina; Franziska Marie; Priglmeir, Anja Teresa; Böhm, Markus; Krcmar, Helmut	Zero Email initiative: A critical review of Change Management during the introduction of Enterprise Social Networks	JIT TC 2018 (published)	JNL (VHB: NR)

CON: Conference; HICSS: Hawaii International Conference on System Sciences; JIT TC: Journal of Information Technology Teaching Cases; NR: Not Ranked, VHB: German Academic Association for Business Research (2015).

Table 2 Summary on embedded publications
Source: Own illustration

2 Research approach

This section introduces the methods used within this thesis and the applied research strategy.

In section **2.1 Research methods**, we present the role of recognized methods in IS research. Within this section we, give a detailed overview on the applied methods within this thesis, namely literature review, qualitative research methods and quantitative research methods as well as theory development. In addition, this section outlines the applied method components within this thesis, namely expert interview, survey, conceptual deductive analysis, empirical inductive analysis and model building.

Subsequently, section **2.2 Research strategy** presents the methods and method components used in this thesis. This section explains the purpose and contribution of the applied methods to answer the introduced research questions. We, furthermore, point out which combination of methods and method components was chosen to address our research questions.

2.1 Research methods

The word “method” originates from the Greek word “méthodos” and means “the way or path towards something” (Bibliographisches Institut GmbH, 2019). In science, a method is a systematic approach or procedure which is applied to solve a scientific problem. More specific, empirical research means that observations, experiences or objective data, gained through a cautious, systematic, objective, verifiable, transparent and standardized epistemological process, are used to investigate a certain research question (Bortz & Döring, 1995). Thus, a research method is always explicit and builds on a mandatory control system which consists of a set of clear and explicit rules (Creswell & Creswell, 2017).

Researchers following the prescribed procedure of accepted and appropriate empirical methods may describe their results as reliable, valid, generalizable and thus of high quality. However, the appropriateness of the chosen method depends on the phenomena being investigated (Creswell & Creswell, 2017).

There are various methods with different characteristics, strengths and weaknesses to choose from. Choosing the right method is a crucial task within a scientific project. Edmondson and McManus (2007) provide a framework to support researchers to identify the most appropriate research method to investigate a certain phenomenon. This framework uses the level of maturity of available theoretical and conceptual background related to the chosen research object to determine the suitability of a research method.

Methods can be divided in two main types of empiric methods, namely qualitative and quantitative methods.

Qualitative methods allow investigating a phenomenon based on subjective human experiences in the form of descriptive data (text, words) (Bortz & Döring, 1995). Following Edmondson and McManus (2007), qualitative methods specifically help to investigate a rather novel phenomenon when, in addition, the related theory is “nascent”, which means that theory is characterized by a low level of maturity.

Quantitative methods allow investigating a phenomenon based on objective numerical data (Bortz & Döring, 1995). Again following Edmondson and McManus (2007), quantitative methods specifically help to investigate facets of an already intensively researched phenomenon, when, in addition, the related theory is “mature”, which means that theory is characterized by a high level of maturity.

A mixed-method or hybrid-method approach combines qualitative and quantitative methods to investigate a known but not thoroughly investigated phenomenon. Here, in addition, the related theory is “intermediate”, which means that theory is not characterized as “nascent” nor “mature” but by an intermediate level of maturity (Edmondson & McManus, 2007).

Investigating the effects of ESNs on organizations is assignable to partly economic science, social science and computer science and thus rooted in the field of information system research (ISR). ISR strives to design and explain the relationship between technologies, information systems and their social and economic impact as well as the surrounding circumstances and the actual environment of the information system (Hess, 2012). Thus, qualitative and quantitative research methods can be furthermore distinguished by the dimension paradigm based on two factors, namely behavioral or epistemological science (explain) and design science (design).

As shown by Schreiner, Hess, and Benlian (2015), research methods in the field of ISR can be classified based on two dimension, namely *paradigm* and *degree of formalization*. The dimension paradigm comprises the factors behavioral science-based research (representing behavioral science) and design science based research (representing design science). The dimension degree of formalization consists of the factors low (representing qualitative methods) and high (representing quantitative methods). As shown in Figure 4, Schreiner et al. (2015) classify the mainly used methods in ISR based on these two dimensions.

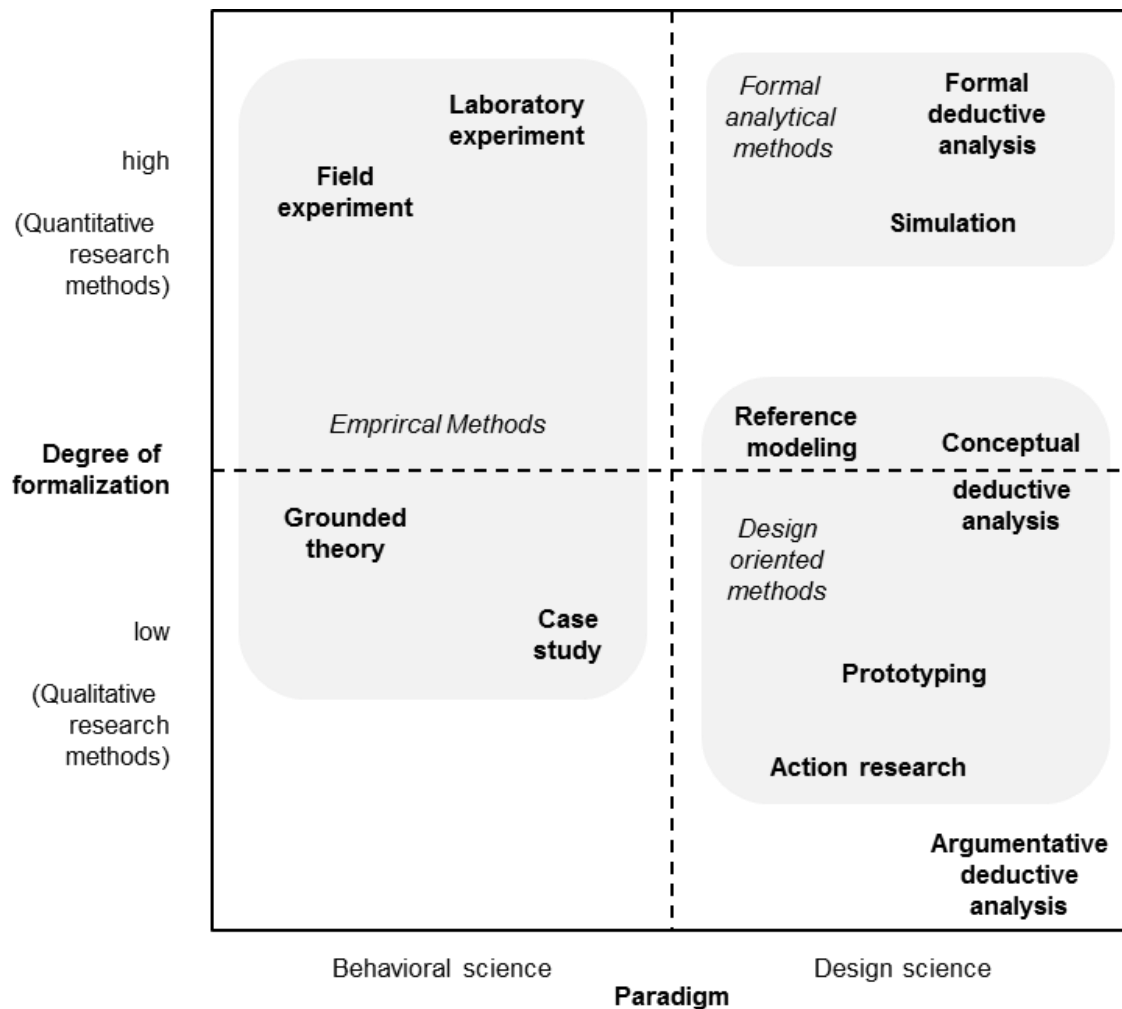


Figure 4 Framework of mainly used methods in information system research
 Source: Own illustration following Wilde and Hess (2007) and Schreiner et al. (2015)

We, next, introduce the methods applied within this thesis by summarizing their main characteristics. A detailed description how the methods were applied may be found in a separate method section we present for each study.

2.1.1 Literature research

Synthesizing the relevant literature from extant literature is a key task for researchers to ensure that their research uses the current body of knowledge as a starting basis (Webster & Watson, 2002). Researcher need to conduct a systematic and comprehensive literature review to determine all relevant literature in a specific field of research (Webster & Watson, 2002).

Following H. M. Cooper (1988), the goals of a literature review are as follows: understanding and integrating prior work; synthesizing prior work and getting oneself into the position to be able to criticize prior work; determining central issues and guiding questions affecting the own research project. Within a specific research field, the scope of literature reviews usually

comprises extant research outcomes, recognized research models, important theories, or a specific research object such as ESNs (H. M. Cooper, 1988).

Another advantage of a literature research is that it supports developing a reasonable research approach by identifying literature and factors that could require the researcher to adjust or even drop the initially addressed research question (Vom Brocke et al., 2009).

"A complete review covers relevant literature on the topic and is not confined to one research methodology, one set of journals, or one geographic region" (Webster & Watson, 2002).

Widespread and well recognized approaches to conduct a literature review in ISR originate from Webster and Watson (2002) and Vom Brocke et al. (2009). As depicted in Figure 5, Böhm (2015) combines the recommendations of Webster and Watson (2002) of how to structure a literature review and the recommended process of Vom Brocke et al. (2009) of how to conduct a literature review.

Following the representation of Böhm (2015), the key elements of a structured literature review are: First, determine the aim of the literature review; second, determine the research field; third determine related fields of research which could be of interest; fourth, determine databases relevant to search in; fifth, determine which key words to use for the search process; sixth, determine whether to limit the search period (usually no restrictions) (note: document assumptions, preconditions and decisions taken during the steps one to six) ; seventh, conduct a primary search in literature data bases, leading journals and well recognized conference proceedings, read the abstracts of the sources of the search result to identify relevant sources and sort out those not relevant for the research project; eighth, perform a backward search through the references of the identified relevant sources to identify further relevant literature (proceed with conducting a backward search and a forward search for every additionally identified source until no new relevant literature can be identified); ninth, perform a forward search to identify and review sources that cite the already identified relevant sources; tenth, perform an in-depth analysis of the identified relevant sources and describe the identified relevant concepts; eleventh, describe the relationship between the identified concepts; twelfth, identify, confirm or reject research gaps in the research field.

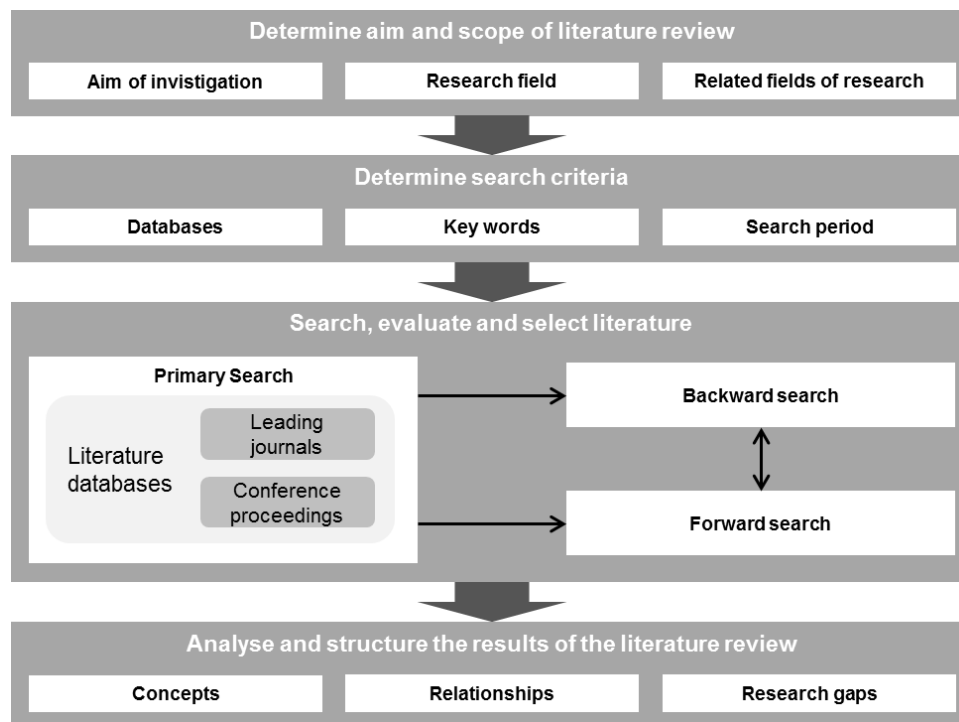


Figure 5 Process of a systematic literature review

Source: Presentation by Böhm (2015) following Webster and Watson (2002) and Vom Brocke et al. (2009)

2.1.2 Qualitative research methods

The goal of qualitative research is to provide an explanation for phenomena that can be empirically experienced. A qualitative research method is usually used in the field of social science and provides a systematic approach to collect and analyze non-standardized or unquantified data. Qualitative research specifically addresses complex social phenomena. Archive research, observations and interviews are mainly used method components to generate the necessary descriptive data (text, words) which is subsequently analyzed to answer a certain research question. Overall, qualitative research methods process subjective human experiences to investigate a certain phenomenon (Bortz & Döring, 1995). Thus, qualitative research is characterized as subjectivist and relativist; it is context-centered and accepts ambiguity.

Following (Gläser & Laudel, 2009), free interpretation, sequence analysis, coding and the qualitative or structuring content analysis are the analyze methods mainly used in qualitative research. When using the free interpretation method, a researcher reads through the data and creates a summarized own interpretation. A sequence analysis emphasizes analyzing the thematic and temporal relations of the statements within the data before interpreting the data. Through coding (adding keywords to specific passages in the text), a content-related structure of the text is created as a basis for the concluding interpretation. A qualitative or structuring content analysis uses a predefined matrix to map passages in the text to predefined categories which again is then the basis for a concluding interpretation.

Overall, qualitative research consist of open data collection methods and interpretative analyze methods (Bortz & Döring, 1995).

2.1.2.1 Case study

A case study is an often used qualitative empirical research approach to investigate phenomena in the field of ISR. A case study research is specifically appropriate to answer research questions that address a relationship (“how?”) or the reason (“why?”) for the existence of phenomena (Benbasat, Goldstein, & Mead, 1987; Yin, 2014). It is used when a research topic has only little empirical substantiation and when current perspectives seem inadequate or conflict with each other (Eisenhardt, 1989). Case study research allows to better understand a certain phenomenon or to develop theory regarding a phenomenon that cannot be clearly distinguished from its context yet (Yin, 2014). In such cases, where a research object cannot be controlled, this method is usually used to develop theory and thus increase understanding about the phenomenon.

Benbasat et al. (1987) outline three reasons why case study research is a viable ISR strategy. First, applying this method helps investigating phenomena in a natural setting and generate theories from practice. Second, a case study helps to understand the nature and complexity of phenomena. Third, conducting a case study is useful to investigate an area in which few previous studies have been carried out.

As, shown in Figure 6, Yin (2014) describes the typical approach of applying case study research as a linear but iterative process. The steps study design (design), data collection (collect) and data analysis (analyze) are constantly adapted according to the gained knowledge until a theoretical saturation is achieved. We, next provide a short summary of the main steps of case study research outlined by Yin (2014).

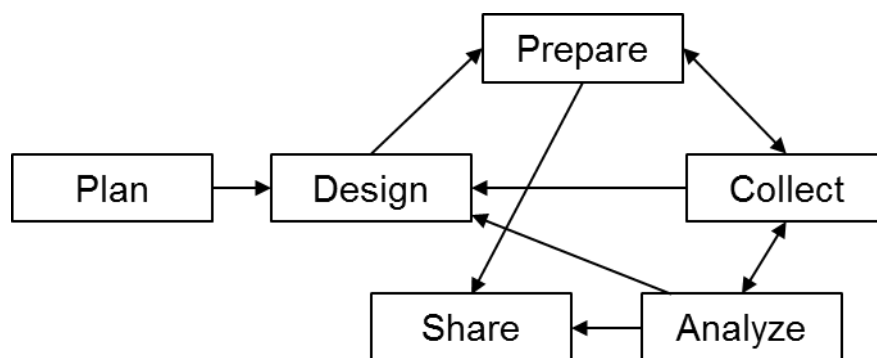


Figure 6 Case study research, a linear but iterative process

Source: Yin (2014)

Within the step *getting started* (plan), the researcher develops ideas regarding the research questions to answer, identifies the relevant situation for doing a case study and finally decides whether to conduct a case study. Within the step *designing case studies* (design), the researcher identifies the case study design by identifying theory, determining the research question, the propositions, the research object as well as the relationship between data and propositions. Finally, the case study design (single, multiple, holistic, embedded) is determined. Within the

step *preparing to collect case study evidence* (prepare) the researcher identifies the necessary skills to conduct a case study research and analyses his own skills. Furthermore, the researcher trains and simulates conducting the case study to prepare collecting case study evidence. Within the step *collecting case study evidence* (collect) the researcher collects data from various sources, such as documentations, archival records, interviews, direct observations and physical artifacts. To ensure a high level of validity, the researcher should ideally combine and triangulate data from different sources. Within the step *analyzing case study evidence* (analyze), the researcher creates a general analytical strategy to get order into the collected data in order to construct a possible explanation. Yin (2014) suggests five analytical techniques to ensure a high level of internal and external validity during this step, namely pattern matching, explanation building, time-series analysis, logic models, and cross-case synthesis. Within the step *reporting case studies* (share), the researcher identifies the potential audience, composes the case study report and shares his results by adapting format and writing style accordingly to the addressed audience.

2.1.3 Quantitative research methods

The goal of quantitative research is to test hypotheses by producing and analyzing objective numeric data in order to test hypotheses and increase understanding on a scientific problem (Bortz & Döring, 1995).

Quantitative research is characterized as strongly theory driven. Quantitative research is furthermore characterized by the application of standardized data collection methods. Within quantitative research, data is analyzed via statistical methods. Quantitative methods are specifically appropriate for descriptive and causal investigations and thus specifically appropriate to e.g. test certain hypotheses (Lehmann, Gupta, & Steckel, 1998).

The most common quantitative research methods are: field experiments, highly standardized interviews, formal deductive analysis and simulations (Schreiner et al., 2015; Wilde & Hess, 2007). Within this thesis, we apply the quantitative research method of a field experiment.

2.1.3.1 Field experiment

Within this paragraph, we outline the main characteristics of an experiment as presented by Schreiner et al. (2015). An experiment allows investigating causal connections in controlled environments. During an experiment, an experimental variable is manipulated in a repeatable way to measure the effect of the manipulation. There are different types of experiments, which are distinguished by the possibility to keep the environmental variables constant throughout the experiment. Theory distinguishes three main types of experiments, namely field experiments, quasi-experiments and laboratory experiments. Within a field experiment, a research object is investigated in its natural environment. A quasi-experiment is characterized by a realistic degree of methodological control. Within a laboratory experiment, a research object is investigated in a simulated natural environment.

An experimental design comprises at least one or the combination of the following two components, namely the use of different groups (experimental group and control group) and

the use of different times of measurement (pre-treatment-measurement and resurvey with treatment) (Diekmann, 2007).

Experiments are furthermore characterized by the way experimentees get assigned to either the experiment or the control group, namely randomly or non-randomly. While within field and laboratory experiments the experimentees get assigned in a randomly way (Döring & Bortz, 2016), the experimentees of a quasi-experiment are assigned to the experimental or control group in a non-randomly way (Schreiner et al., 2015).

The control group processes the experiment in an experimental setup that represents the state of the art or the current mode of operation. The experiment group is exposed to a treatment. A treatment is determined by the manipulation of the experimental variable. More specific, a treatment is described by the combination of manipulating levels of the independent variable (Diekmann, 2007).

When conducted according to the high methodological standards, experiments are characterized by a high internal and external validity. Internal validity is met when the effects on the dependent variable can unequivocally be ascribed to the treatment (Döring & Bortz, 2016). Internal validity is met when individual- and research-related confounding variables are controlled. Individual-related confounding variables are controlled when experimentees are assigned to either the experiment or the control group in a randomly way. Research-related confounding variables can best be controlled or eliminated when the procedure of the experiment is designed as robust and highly standardized (Döring & Bortz, 2016). External validity determines to which level the experimental conditions represent the natural environment of the investigated phenomenon. External validity is high when the experimental conditions represent the natural and everyday work conditions of the experimentee. Following Diekmann (2007), the external validity of a field experiment is high and the external validity of a laboratory experiment is low.

2.1.4 Data collection methods

Following Wilde and Hess (2006), an ISR method comprises three parts, namely a process part, a reality describing part as well as an analysis part. Method components are characterized by providing methodological guidance for one or two of the mentioned parts a method consists of (Wilde & Hess, 2006). Within this section we describe two method components we use within this thesis, namely expert interview and survey.

2.1.4.1 Expert interview

Interviews are a commonly used method component in social science and also in ISR research. To conduct an interview, the interviewer translates the research question into interview questions (Böhm, 2015). The answers of the interviewees represent the data to be analyzed in order to answer the research question (Gläser & Laudel, 2009). Interviews are conducted to capture experiences made by interviewees in a certain environment.

Müller-Böling and Klandt (1996) distinguish interviews based on the following eight criteria, namely direct/indirect interviews, the level of standardization, number of participants, textuality

and use of media, frequency, aim of research, linguistic character, awareness of the interviewee to be in an interview situation:

First, an interview addresses the research object in a direct or indirect way. An interview captures the interpretations, opinions and attitudes of the interviewees. The interview data is subsequently coded and analyzed to gain a cross-sectional picture which describes the population and usually allows drawing conclusion about the population. While interviews are direct, expert interviews are an indirect form of an interview. The questions asked within an expert interview aim to indirectly capture the interpretations, opinions and attitudes of experts regarding the research object.

Second, interviews are differentiated by their level of standardization. A narrative interview is unstructured and allows exploring a high-level topic with no or low existing knowledge. An in-depth interview is conducted based on an interview guide, is semi-structured and allows exploring the reasons and backgrounds of a certain phenomenon which has been investigated already and a medium level of knowledge is available. Standardized interviews comprise predefined formulations, a pre-defined chronological order of the questions, pre-defined answer options and are specifically appropriate to test hypotheses which have a robust theoretical foundation.

Third, interviews are conducted with a single interviewee or a group.

Fourth, interviews can be conducted verbally (face to face or via telephone) or in written form (questionnaire or chat, paper or online).

Fifth, interviews can be conducted at one specific point of time, twice or more times. Researchers chose one-time interviews to conduct a cross-sectional analysis to describe the population. Researchers with a multiple interview strategy chose a longitudinal research design to capture changes in the population over time or before and after a certain change in the population's environment.

Sixth, interviews aim to determine knowledge, opinions or feelings of the interviewee, to contribute to the decision-process of the interviewee in an informative (e.g. a medical consultation) or influencing (e.g. a sales advice) way.

Seventh, interviews are usually conducted in a specific language, however, also symbols and icons are possible response options to e.g. mitigate language barriers in an intercultural research design.

Eighth, a last criterion of interviews is whether the interviewee is supposed to discern that he or she is in an interview situation, or not.

Within this thesis we use expert interviews. The term "expert" describes the specific role of the interviewee as a valuable source of information regarding the investigated research object. In the context of expert interviews, experts may be described as "research object matter experts". The expert interview is a method component to acquire that knowledge (Gläser & Laudel, 2009).

2.1.4.2 Survey

Unlike expert interviews, which can be used to investigate a certain phenomenon within a qualitative or quantitative research design, surveys are – due to their high level of standardization and formalization – specifically applicable to quantitatively describe the characteristics of a given population or test a certain hypothesis. Through survey research, the researcher aims to gather information about personal and impersonal means of a certain population in order to analyze and describe its characteristics (Isaac & Michael, 1995).

To achieve a high level of standardization and formalization, there are stringent requirements towards design, structure, length, and self-explanatoriness of the survey (Müller-Böling & Klandt, 1993).

Following Schnell, Hill, and Esser (2013), a survey process comprises four blocks, namely the announcement, basic rules for a successful survey design, cover letter and administration: First the announcement letter increases the willingness to cooperate. Second, the basic rules of a survey design are: use short questions to the maximum of 20 words, meet the language level of the participants, avoid leading questions, apply neutral speech, avoid double negative, start with easy questions, start with the general and head towards the specific questions, cluster the questions in subject sections and put sensitive questions to the end. Third, inform the participant about who conducts the research, contact information, the relevance of the research, the assurance that survey data is handled confidential, and how to use the survey. Fourth, from an administrative perspective it is important to assign identifiers to control the response, to document the answers and to estimate the response rate (approximately 70-80% of the participants responded to the survey after ten days).

Following Kraemer (1991), survey research comprises three main characteristics: First, surveys allow a researcher to quantitatively determine, analyze and describe different attributes of a certain target group. In addition, survey research is useful to quantitatively investigate a hypothesis by testing the relationship between independent and dependent variables. Second, data gathered through a survey consists of subjective experiences of the participants and must be treated accordingly. Third, survey research addresses a certain target group and uses the responses to craft a cross-sectional picture which allows drawing conclusion about the characteristics of the population.

2.1.5 Theory development

2.1.5.1 Theoretical background

A theory helps to understand the complexity of phenomena in a parsimonious and clear way. More specific, a theory provides an explanation of empirical events that were observed to occur (van de Ven, 1989).

A complete theory contains four essential elements (Dubin, 1978) based on which Whetten (1989) introduced simple concepts to discuss the theory-development process by simply asking What?, How?, Why?, and Who, Where, When?:

What? This element represents the “factors (variables, constructs, concepts) which logically should be considered as part of the explanation of the social or individual phenomena of interest” (Whetten, 1989)?

How? This element outlines how the factors are related (Whetten, 1989).

Why? This element presents the logic that binds the factors via the proposed relations. In the context of theory development, logic is the “soundness of fundamental views of human nature, organizational requisites, or societal processes [...] provide the basis for judging the reasonableness” (Whetten, 1989).

Who, Where, When? This element stands for the temporal and contextual aspects that explain the boundaries of generalizability of the proposed conceptualization (Whetten, 1989).

Weick (1995) states that “most theories approximate rather than realize the conditions necessary for a strong theory“. Following Merton (1967), Weick (1995) presents four main forms of approximations.

Broad frameworks and general orientations. They specify variables relevant to explain a phenomenon of interest, but they do not specify the relationship among them.

Investigations of concepts. They specify, clarify, and define concepts but they do not relate them.

Post-factum interpretations. They derive ad hoc hypotheses from a single observation but do not explore alternative explanations or new observations.

Empirical generalizations. They summarize the relationship between two variables via an isolated proposition but do not consider further interrelations.

Langley (1999) states that theory needs to be accurate, parsimonious, general, and useful and that method and theory are inextricably intertwined. Following Mohr (1982) and van de Ven and Poole (2005), strong theory in organizational research literature is built on two types of research questions, namely “what questions” and “how questions”.

What questions, such as “What are the antecedents or consequences of a phenomenon?”, imply a variance model, or outcome-driven explanation of the predictor variables that explain variations in some outcome variables (Mohr, 1982). How questions, such as “How does the phenomenon emerge, develop, grow or terminate over time?”, entail a “process model or event-driven explanation of the temporal order and sequence in which a set of events occur based on a story or narrative” (Poole, van de Ven, Dooley, & Holmes, 2000).

Table 3 provides an overview on the epistemological assumptions of variance models and process models.

Variance approach	Process approach
Fixed entities with varying attributes	Entities participate in events and may change over time
Explanations based on necessary and sufficient causality	Explanations based on necessary causality
Explanations based on efficient causality	Explanations based on final, formal, and efficient causality
Generality depends on uniformity across contexts	Generality depends on versatility across cases
Time ordering among independent variables is immaterial	Time ordering of independent events is critical
Emphasis on immediate causation	Explanations are layered and incorporate both immediate and distal causation
Attributes have a single meaning over time	Entities, attributes, events may change in meaning over time

Table 3 Comparison of variance and process model approaches
Source: Poole et al. (2000)

Overall, a theoretical contribution constitutes a comprehensive but parsimonious number of factors (variables, constructs, concepts) and specifies how the factors are related (Whetten, 1989). Thus, a researcher needs to adequately create, develop and explicate concepts and identify and justify the key relationships among these concepts. Thereby it is specifically important, that the researcher argues logically and precisely to back up his assumptions on why the factors are related. Furthermore, the researcher needs to achieve a thorough description of the boundary conditions of the introduced theory as the theoretical contribution bases on the specification of the temporal and contextual boundaries (Suddaby, 2010).

2.1.5.2 Building blocks of a theory

The adequate creation, development and explication of concepts are key steps when building a theory. The quality of a theory depends on the researchers' ability to identify and justify its components and key relationships among its components (construct validity, external validity, internal validity, statistical conclusion validity).

We introduce the key building blocks of a theory by following Kaplan (2017) as interpreted by Rajiv Kumar (2019):

Concepts are abstract terms that can be observed easily, such as “neighbor”, or can be observed with not that much ease, such as “neighborhood”.

Constructs are conceptual abstractions of phenomena that cannot be directly observed (MacCorquodale & Meehl, 1948). Constructs such as “neighborhood quality”, comprise several parameters, such as helpfulness of neighbors, crime rate, cleanliness, quality of roads, regular availability of adequate water and power, greenery, etc. Thus, a construct is less abstract than a concept and it can be defined as a set of operational measures that allows for the study of a theoretical concept (Yin, 2014).

Variables are measurable representations of constructs. For instance, intelligence quotient is a variable that represents the construct mental ability.

Propositions are broader statements that describe and declare the relationship between constructs (e.g., an increase in ESN use causes an increase in individual value contribution of knowledge workers). A proposition is a tentative and conjectural relationship between constructs which is empirically testable (e.g. indirectly via a hypothesis) and thus judged as true or false (Bhattacharjee, 2012).

The empirical formulation of propositions, stated as relationships between variables, is called hypotheses. **Hypotheses** are specific and designed to be empirically testable.

As a summary, we present an overview on the building blocks of a theory in Figure 7.

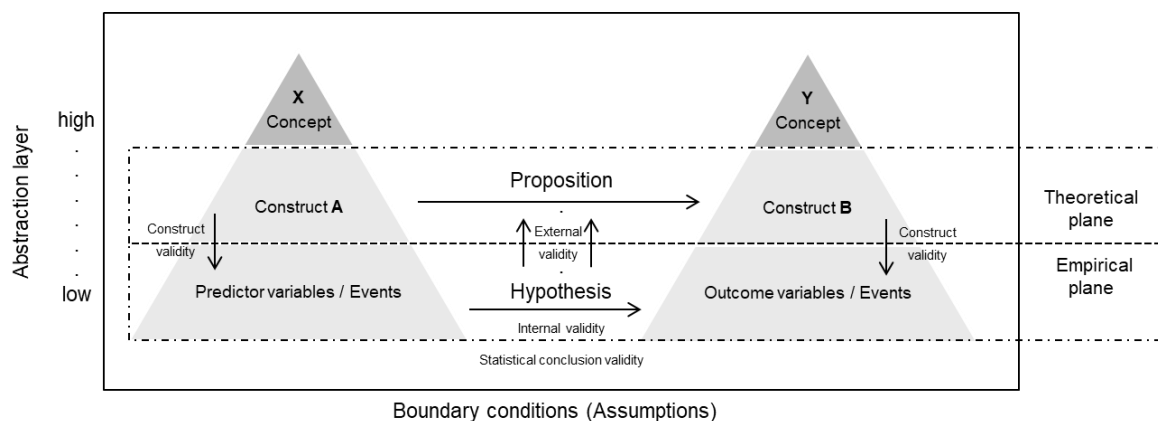


Figure 7 Building blocks of a theory

Source: own illustration following Bhattacharjee (2012)

2.1.5.3 Process of theorizing

Theorizing is seen as one of the most important and difficult tasks for researchers (Eisenhardt, 1989). Weick (1995) defines the process of theorizing to comprise “activities like abstracting, generalizing, relating, selecting, explaining, synthesizing, and idealizing”. When theorizing, “logic replaces data as the basis for evaluation” (Whetten, 1989). Theory can be derived based on logic (deduction) by synthesizing theory or based on empirical observations (induction).

Analog to section 2.1.4 where we classify data collection methods as method components, we classify theorizing methods as method components. Again, following Wilde and Hess (2006), an ISR method consists of three parts, namely a process part, a reality describing part as well

as an analysis part. Method components are characterized by providing methodological guidance for one or two of the mentioned parts a method consists of (Wilde & Hess, 2006). Subsequently, we describe three method components we use within this thesis, namely conceptual deductive analysis, empirical inductive analysis and model building.

2.1.5.3.1 Conceptual deductive analysis

Conceptual deductive analysis is the process of drawing conclusions about a phenomenon or behavior based on existing theory (Bhattacharjee, 2012). When applying a conceptual deductive analysis, a researcher applies existing theories in a novel context or extends or modifies existing theories to explain a new context (Bhattacharjee, 2012).

2.1.5.3.2 Empirical inductive analysis

When applying an empirical inductive analysis, a researcher builds theories inductively based on observed patterns of events or behaviors (Bhattacharjee, 2012). Grounded in empirical observations, empirical inductive analysis is categorized within the methodical categories of “design science” or “grounded theory” (Schreiner et al., 2015). Researchers using this method component need to reflect, understand, and mitigate their individual biases and focus on providing consistent explanations for the observed patterns (Bhattacharjee, 2012).

2.1.5.3.3 Model building

While a theory explains a given phenomenon, a model represents and depicts this phenomenon (Bhattacharjee, 2012). Thus, when applying the method component model building, a researcher refines and structures his/her own results gained through inductive and/or deductive reasoning. The result of the model-building process of Bhattacharjee (2012) as shown in Figure 8 is a model (extended or modified from the original theory) that can be empirically tested.

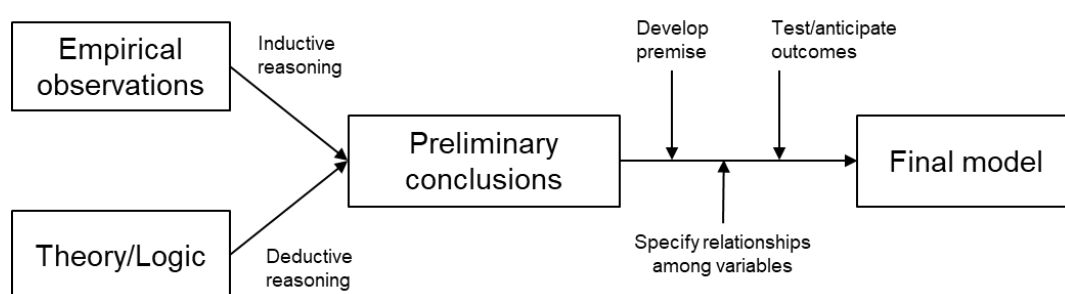


Figure 8 The model-building process

Source: Bhattacharjee (2012)

2.1.5.3.4 Theory justification

To justify a theory, a researcher needs to qualify the underlying arguments and claims. The researcher needs to outline the logic that underlies his argumentation, outline the background

and context of the phenomenon of interest and provide reasons and evidence to back up the postulated theory.

The “Toulmin Method” of Toulmin (1958) provides a robust and recognized technique to justify a theory in a structured way. As shown in Figure 9, the “Toulmin Method” comprises seven steps. First, the researcher makes his claim by defining the propositions and hypotheses. Second, the researcher restates the claim by outlining the problem behind the phenomenon and the context of the claim. Third, the researcher qualifies his claim by explaining under which circumstances his claim holds, and what assumptions, contingencies and boundary conditions exist. Fourth, the researcher explains the logic and premises behind his claim. Fifth, the researcher provides additional grounds, such as data or other warrants, to support his argumentation and thus to back his claim. Sixth, the researcher discloses possible limitations in his argumentation in terms of logic, validity, truth and persuasiveness. Seventh, the researcher draws a strong stated conclusion.

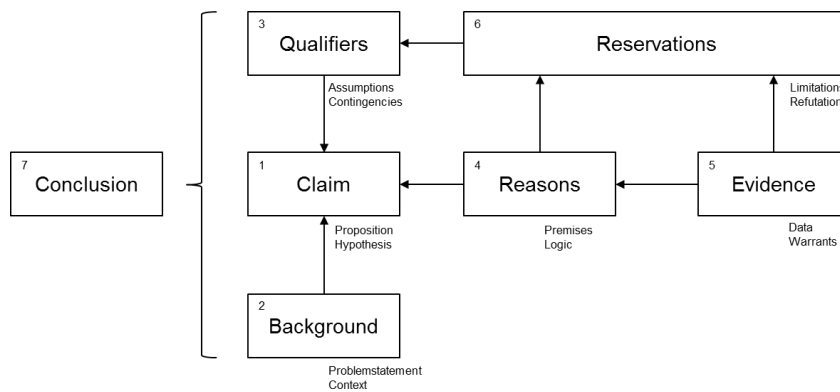


Figure 9 The “Toulmin Method” in the context of theory development
Source: Own representation following Toulmin (1958)

2.2 Research strategy

To investigate the effects of ESNs on organizations, we follow a comprehensive empirical research approach which is characterized by the combination of behavioral science and design science. Within this thesis, we combine qualitative and quantitative methods to answer the introduced research questions. This mixed-method approach allows investigating tangible and intangible aspects relevant to explain how ESNs impact organizations.

2.2.1 Applied methods and addressed research questions

Table 4 provides an overview of the methods applied within this thesis per research question.

RQ1: *How can the socio-technical phenomenon of ESNs be conclusively explained?* **RQ2:** *What are the archetypical users of ESN systems, "how users value the ESN system they use," and "what kind of obstacles do the users perceive"?* **RQ3:** *How and why does ESN use create business value?* **RQ4:** *Does the usage of smileys affect the perceived characteristics of executives?* **RQ5:** *What is effective change management practice for introducing an ESN in a large organization?*

Methods applied in this thesis	RQ1	RQ2	RQ3	RQ4	RQ5
--- State of the art analysis -----	-----	-----	-----	-----	-----
M1. Literature review	●	●	●	●	●
--- Qualitative empirical methods -----	-----	-----	-----	-----	-----
M2. Case study		●		●	●
--- Quantitative empirical methods -----	-----	-----	-----	-----	-----
M3. Field experiment			●		
--- Data collection methods -----	-----	-----	-----	-----	-----
MC1. Expert interviews		●		●	●
MC2. Survey			●	●	
--- Theory Development -----	-----	-----	-----	-----	-----
MC3. Conceptual deductive analysis	●	●	●		●
MC4. Empirical inductive analysis		●		●	●
MC5. Model building	●	●	●		●

M: Method; MC: Method component; RQ: Research question; ●: M/MC applied to answer RQ.

Table 4 Applied methods and addressed research questions

Source: Own illustration following Wilde and Hess (2006),
Wilde and Hess (2007) and Schreiner et al. (2015)

2.2.2 Context, purpose and contribution of the applied methods

RQ1: First, we outline the methodological approach we choose to conduct the study State of the art on ESNs which is described in the section 3. This point prevalence study consists of explorative and descriptive investigations. Within this study, we first conduct a literature review

(M1) to identify the relevant conceptual background on ESN research. Thus, we identify research gaps and classify our research questions according to the research agenda outlined in the literature. Subsequently, we conduct a conceptual deductive analysis (MC3) and use the methods of theory development and modeling (MC5) to construct a framework to clarify and determine the research object ESN.

RQ2: Second, we introduce the methodological approach we choose to conduct the study The adoption and diffusion of ESNs which is described in the section 4. This point prevalence study comprises explorative and descriptive investigations. To set the conceptual background of this study, we start by conducting a literature review (M1) emphasizing adoption and diffusion of IS in general and of ESNs in particular. With this theoretical foundation, we chose to investigate the adoption and diffusion of ESNs in a real-life setting. Therefore, we conduct a case study (M2) to answer RQ2. We generate the underlying data (n=28) by conducting expert interviews (MC1). We examine the data by applying an empiric inductive analysis (MC4), namely the structuring content analysis (Mayring, 2010; Miles & Huberman, 1994), to subsequently use the methods of theory development and modeling (MC5) to help explaining the adoption and the diffusion of ESNs with a model that describes and characterizes archetypical ESN users.

RQ3: Third, we show the methodological approach we choose to conduct the study The value contribution of ESNs which is described in section 5. This point prevalence study comprises explorative and confirmatory investigations. To set the conceptual background of this study, we start by conducting a literature review (M1) emphasizing success measurement and value contribution of IS in general and of ESNs in particular. Based on this theoretical foundation, we chose quantifying the relationship between ESN use and its value contribution by conducting a field experiment (M3). Preparatory, we apply a conceptual deductive analysis (MC3) to craft a valid measurement instrument (MC5) to observe and measure the value contribution of ESNs. We chose documenting the field experiment (n=75/42) and gathering complementary demographic data via an online survey (MC2).

RQ4: Fourth, we present the methodological approach we choose to conduct the study The role of communicational behavior of executives in the age of ESNs which is described in section 6. This point prevalence study consists of explorative and confirmatory investigations. To set the conceptual background of this study, we start by conducting a literature review (M1) emphasizing current communicational behavior of executives in general and in the context of corporate social media in particular. Based on this theoretical foundation, we chose to investigate how social communication styles of leaders affect their perceived traits by conducting a case study (M2). We chose generating the underlying data via an online survey (n=55) (MC2) which we complement by an in-depth expert interview (MC1). We examine the data by applying an empiric inductive analysis (MC4).

RQ5: Fifth, we introduce the methodological approach we choose to conduct the study Organizational change associated with ESNs which is described in section 7. This point prevalence study comprises explorative and descriptive investigations. To prepare the conceptual background of this study, we conduct a literature review (M1) emphasizing change management in general and change management in the context of ESNs in particular. Based on

this theoretical foundation, we chose to investigate the role of change management in the context of ESNs in a real-life setting. Therefore, we conducted a case study (M2) to answer RQ5. We complement the insights of the literature review by conducting (n=7) in-depth expert interviews (MC1). We examine the data by applying a conceptual deductive analysis (MC3), complemented by an empiric inductive analysis (MC4), to create a teaching case inclusive comprehensive teaching note. We use the methods of theory development and modeling (MC5) to craft a framework of successful change management when integrating ESNs in organizations.

3 State of the art on ESNs

3.1 Theoretical background

Enterprise Social Networks (ESNs) are internal web-based user centered social platforms that allow their users to communicate with colleagues; to identify potential communication partners; to create, publish, or edit their own content; and to access content created by other users (boyd & Ellison, 2007; Leonardi et al., 2013). Thus ESN users are encouraged to actively and openly contribute and collaborate (e.g., to discussions or by voicing criticism) with a “sharing is caring” attitude.

ESNs have been exhaustively introduced in large multinational organizations (Ellison et al., 2015; Leonardi et al., 2013). Business analysts have estimated that “companies could raise the productivity of knowledge workers by 20 to 25 percent” by adopting ESNs (Bughin et al., 2012).

The emergence of ESNs can be traced from discussions around computer-supported cooperative work (CSCW), which comprises technological, psychological, social, and business related aspects (Wilson, 1991). With the term *enterprise 2.0*, McAfee (2006) introduced the use of Web 2.0 technologies in an organizational context. Web 2.0 technologies, such as (micro)blogs, chats, communities, forums, or wikis, not only allow knowledge workers to consume content but also to create and publish content about their knowledge, their workflows, and work results (Fuchs-Kittowski, 2007; Kulkarni, Ravindran, & Freeze, 2006; McAfee, 2006). The term *enterprise 2.0* developed and encouraged a general visionary discussion around digitization and social technologies that enhance the communication, the collaboration, and thus, the overall performance of an organization (Richter, Mörl, Trier & Koch, 2011). Therefore, ESNs can be seen as a recent approach toward an ideal enterprise 2.0. We present an overview on Web 2.0 technologies in Table 5.

<i>Web 2.0 technology</i>	<i>Description</i>	<i>Source</i>
Blog	Web-based authoring system; allows blog owner to publish articles and blog readers to comment them.	Probst, Raub, & Romhardt, 2013
Chat / instant messaging	Web-based communication system; allows user a quasi-synchron written communication with other users by exchanging consecutively displayed messages.	Koch & Richter, 2009
Community	Web-based collaboration system; allows users of a certain community (interest, expertise, project, department) to communicate, collaborate (e.g., content co-creation, create a knowledge base) and document on community related tasks.	Stocker & Tochtermann, 2011
Forum	Web-based discussion and information sharing system; allows topic related discussions (threads) where contributions are sequential and statically listed.	Schmidt & Taddicken, 2017
Microblogging	Web-based authoring system; allows author to spread short messages within the network.	Riemer, Richter, & Bohringer, 2010
Wiki	Web-based authoring system; allows articles construction and editing with the focus to archive an enterprises' knowledge.	Stocker & Tochtermann, 2011

Table 5 Web 2.0 technologies in enterprises

Source: Own illustration

Organizations strive to generate, develop and distribute business relevant information most efficiently within today's dynamic, decentral, virtual, and project-driven work environments (Strother, Ulijn, & Fazal, 2012). Especially as most established information and communication solutions (email, intranet, wiki, instant messaging ...) rather lead to information overload than to provide a performant foundation to process business relevant information (Sobotta & Hummel, 2015; Verdot et al., 2011). ESNs are discussed to mitigate information overload by combining and enhancing current Web2.0 technologies and to provide a fast and flexible alternative to lift communication, information sharing, and collaboration within organizations to the required level (Leonardi et al., 2013; Moser, Preising, Göritz, & Paul, 2002).

ESNs are introduced to increase the effectiveness and productivity of knowledge workers compared to prevalent communication systems (mostly email-centric) (Treem & Leonardi, 2013). A central element of an ESN is the feature of personalized user profiles and avatars that link authors to content and characterize ESNs as social platforms (boyd & Ellison, 2007). Previous research identified various positive effects of ESN use. A major benefit of ESNs is that messages from colleagues are visible to other users (message transparency) and the structure of their communication networks is explained (network translucence) (Leonardi, 2014). The key benefits of ESNs are, improved communication across hierarchical and organizational boundaries (DiMicco et al., 2008; Zhang, Qu, Cody, & Wu, 2010), improved

knowledge transfer and expert search (Bughin, 2008; Fulk & Yuan, 2013; Leonardi, 2014; Li et al., 2012; Mansour, Abusalah, & Askenäs, 2011), enhanced innovational strength (H. Hasan & Pfaff, 2006; Leonardi, 2014; Mäntymäki & Riemer, 2014), and the establishment and strengthening of social ties (Jackson, Yates, & Orlikowski, 2007; Thom-Santelli, Muller, & Millen, 2008).

However, even if ESNs are implemented in organizations, their value contribution appears unclear and 80% of projects do not fulfill their expectations (Mann et al., 2012). The typical ROI of any social technology becomes positive when 15% to 25% of employees use such technology extensively and companies should not assume that “If we build it, they will come” (Bughin, 2013). In effect, the value of ESN continues to be a controversial topic, making it difficult for managers to justify the often high level of investment.

Topical ESN core literature¹ outlined in Table 6 addresses three major fields of research: First, literature emphasizes use-cases and positive effects of ESN use. Second, literature points out the role of quantifying the value contribution of ESN use and performance measurement. Third, literature focuses on topics around the adoption of ESNs and the motivation of users to use ESNs, the challenges and barriers to use ESNs, and the influence of the organizational culture on ESN use behavior

<i>Core Literature</i>	<i>Impact of Source¹</i>	<i>Use cases / benefits</i>	<i>Value contribution / performance measurement</i>	<i>Adoption / Motivation</i>
Ellison et al. (2015)	A – Journal	x		x
Choudrie and Zamani (2016)	A – Journal			x
Alarifi, Sedera, and Recker (2015)	A – Conference			x
Cao, Gao, Li, and Friedman (2013)	A – Conference			x
Herzog, Richter, and Steinhüser (2015)	A – Conference		x	
Kügler, Smolnik, and Raeth (2012)	A – Conference			x
A. Richter, Heidemann, Klier, and Behrendt (2013)	B – Journal		x	
Riemer et al. (2015)	B – Journal	x		x
Richter, Mörl, Trier and Koch (2011)	B – Conference		x	
Herzog, Richter, Steinhüser, Hoppe, and Koch (2013)	B – Conference		x	
A. Richter and Riemer (2013)	B – Conference	x	x	x

Table 6 **Topical ESN literature**
Source: Own illustration based on VHB JOURQUAL 3 (2015)

3.2 Method

To identify the relevant ESN literature, we perform a literature review based on Webster and Watson (2002) as described in section 2.1.1. We present the review process parameters in Table 7. When multiple definitions for a certain term exist, publications holding the highest scientific

¹ Impact of Source = VHB-JOURQUAL 3 (2015) ranking B or better

impact² were acknowledged. Additionally we examine two commercial ESN solutions (blueKiwi, 2017; Unify, 2018) to identify (1) referenced components, (2) inherent features and functionalities, and (3) inherent executable actions and interactions.

Overview Literature Review	
search string	(„Enterprise Social Network“, „ESN“, „Corporate Social Network“, „Organizational Social Network“, „Enterprise Social Web“, „Enterprise Social Intranet“, „Business Social Network“, „Enterprise Social Systems“, „Enterprise Social Technologies“, „Enterprise Mashup“, „Enterprise Social Software Suites“, „Enterprise Social Software“, „Enterprise Social Media“, „Organizational Social Media“, „Social Intranet“, „Enterprise Social Information System“, „Enterprise 2.0“, „E2.0“, „Organizational Web 2.0“)
data bases	Google Scholar, Emerald, Microsoft Academic, Elsevier ScienceDirect, Springerlink DB, JSTOR, ProQuest, ResearchGate, EBSCO
journals	Information Systems Research (ISR), Management Information Systems Quarterly (MISQ), Journal of Association for Information Systems (JAIS), Journal of Information Technology, Information Systems Journal (ISJ), Journal of Strategic Information Systems, Business & Information Systems Engineering (BISE), Information & Management, Communications of the Association for information systems (CAIS), Journal of Organizational Computing and Electronic Commerce, International Journal of Information Management, Journal of Association for Information Systems (JAIS)
conferences	International Conference on Information Systems (ICIS), European Conference on Information Systems (ECIS), International Conference on Advanced Communication Technology (ICTACT), Hawaii International Conference on System Sciences (HICSS), European Conference on Computer Supported Cooperative Work (ECSCW), Americas Conference on Information Systems (AMCIS), Multikonferenz Wirtschaftsinformatik (MKWI)

Table 7 Literature review parameters

Source: Own illustration

3.3 Research agenda

There has been an abundance of literature on ESNs for some time as ESNs become increasingly important in information-intensive industries. The fact is, their corresponding research has identified various benefits of ESN use. On the downside, scientific contributions and corporate practice show that previous approaches in measuring the success of ESNs do not provide a solid theoretical base (Schryen, 2013). Overall, literature provides important insights into the ESNs' nature and key principles. Nevertheless, we subsequently provide several questions that remained unanswered.

Do large investments and expectations toward an ESN pay off? What is the value contribution of ESNs and how can it be quantified and measured? What are the archetypical users of ESNs and how are they addressed during a change management process? How can the so-called “adoption paradox” (in which a company introduces an ESN, but the individual employee does not use it) be solved?

As presented in Table 6, there are three major fields of research addressed by topical ESN core literature. The first area comprises the value contribution, ESN use cases, and positive effects of ESN use (Ellison et al., 2015; Riemer et al., 2015). The second area addresses quantifying

² according to (i) VHB JOURQUAL 3 (2015) ranking and (ii) google scholar # of citations

of the value contribution of ESN use and performance measurement (Herzog et al., 2015; A. Richter, Heidemann et al., 2013). The third focuses on the adoption and motivation to use ESNs, the challenges and barriers of ESN use, and the influence of the organizational culture on ESN use behavior (Alarifi et al., 2015; Choudrie & Zamani, 2016; Ellison et al., 2015).

To craft a focused research agenda, we contemplate the state of the art on ESNs from a “what’s in for me” angle of both, organizations that introduce ESNs and individual employees that are supposed to use ESNs.

From the above, future research should strive to better understand, quantify, and prove the positive effects of ESN use, outline individual and organizational benefits, and determine the individual circumstances and organizational environments in which these benefits occur. Vice versa, future research needs to better understand, quantify, and prove the negative effects of ESN use, outline individual and organizational deteriorations, and determine the individual circumstances and organizational environments in which these deteriorations set in. The focus of the studies should move “from identifying benefits towards ways of quantifying benefits” of ESNs (Williams et al., 2013).

In this case, when ways to quantify the value contribution of ESN use are missing, future research is requested to develop and employ novel research methods, measurement instruments and techniques. Here, the interactions (affordances) on an ESN could give a promising starting point to put ESN use into the value chain. This would allow researchers to measure the task efficiency of tasks, a business process consists of when performing it with or without using an ESN (Gattiker & Goodhue, 2005; Herzog & Richter, 2016; Kremer, 2015; Petter, Straub, & Rai, 2007). Under the premise that positive effects and benefits outweigh the negative effects and deteriorations, the research focus changes to ESN adoption and diffusion (Rogers, 2003).

When the value contribution of ESN use seems to be not only a consequence but also the antecedent of actual ESN utilization intensity, a fruitful avenue of research concerns the understanding of existing archetypical ESN users, their characteristics, and their motives for use or non-use of ESN. Should ESN use pay off, there is a need to understand how to develop and stabilize the ESN utilization intensity and how to address ESN users from a leadership and change management perspective. Thus, another important question that needs answering is how proven benefits support convincing non-users to adopt an ESN through constructs such as *result demonstrability* within topical technology acceptance literature (Fred D. Davis, 1989; Moore & Benbasat, 1991; Venkatesh & Bala, 2008).

We address the identified research gaps within the upcoming chapters. However, with our state-of-the-art research, we found another, a rather surprising gap in literature: The ESN definition gap. Despite the huge amount of ESN literature, there is no broadly accepted and widely recognized definition of what an ESN actually is. Therefore, we decided to start investigating ESNs by crafting a unified and integrated definition for what ESNs are. We present the study in chapter 3.4 *Enterprise Social Network definition gap*.

3.4 Enterprise Social Network definition gap

Overall, research proposed a variety of definitions of what ESNs are. Surprisingly, as a main result, we found that a clear or unified definition of what ESNs actually are is missing. Interestingly, neither the specific components of ESNs nor the way how they relate to each other are described in a congruent way. This impedes researchers to present their results with the necessary level of transparency and comparability and to orient themselves in the field of ESN research. Within this study, we craft a robust and thorough definition of the emerging socio-technical phenomenon of ESNs which has not been conclusively explained yet.

Several studies such as those performed by Richter, Mörl, Trier & Koch (2011) and Turban et al. (2011), have consistently shown that ESNs consist of different components and affordances. Overall, literature proposes a variety of definitions to associate with ESNs. For example, Raeth et al. (2011) described ESNs as organizational social web sites (OSWS), while Kuegler et al. (2015) uses enterprise social software platforms (ESSP). Despite their overlap in meaning and their low fit, these terms are regularly used to describe ESNs. Leonardi et al. (2013) defines ESNs as enterprise social media (ESM) and is regularly adopted by research. As an example we refer to the work of Hacker (2017), Mäntymäki and Riemer (2016), Riemer et al. (2015), and Wehner et al. (2017). It is furthermore remarkable that existing definitions do not include the latest technological features, such as voice or location based services, that ESN solutions provide today (Unify, 2018). We find it essential to anchor ESN research on a definition that determines and characterizes the various components and affordances of ESNs and place them into a proper context.

Within the next sections, we extract the differences in meaning, overlapping and partly overlapping components, inherent features and functionalities, and inherent executable actions and interactions, of ESN and ESN-alike definitions in topical literature. We analyze, design and discuss the term ESN based on literature from the disciplines of economics, management and information systems that primarily address ESN use, ESN users, value contribution, and utilization intensity of ESNs, as well as ESN adoption and dissemination.

3.4.1 ESN and ESN-alike terms in literature

As stated, there are many definitions of what ESNs are. Within this section we present an overview on definitions of ESN in Table 8 and a variety of definitions of ESN-alike artefacts in Table 9.

<i>Definitions of ESN</i>	<i>Source</i>	<i>IoS³</i>
ESN refers to social networking on intranet social network platforms, which can functionally be compared to SNSs, but are only accessible in the enterprise intranet. Hence, the set of individuals is restricted to employees of an enterprise and the links mostly reflect professional relationships.	D. Richter et al., 2011, p. 91	B/182
ESNs allow performing tasks of the type information dissemination and sharing, communication, collaboration and innovation, training and learning, knowledge management, management activities, and problem solving.	Turban et al., 2011, pp. 204–208	C/164

³ Impact of Source (IoS) = VHB-JOURQUAL 3 (2015) ranking / citations in google scholar, 21.02.2018

Social network software developed for the company, usually called Enterprise Social Network (ESN), and is a web-based service, which allows individuals to create and maintain online public or semi-public profiles and foster connections with other members of that organization.	Leftheriotis & Giannakos, 2014, p. 135	-/106
Enterprise Social Networking (ESN) platforms put emphasis on social relationships, communication, conversation, and ad-hoc sharing. As such, from a media repertoire point of view, they offer to complement nicely the technologies of the first wave that place emphasis on user-generated content.	Riemer & Scifleet, 2012, pp. 3–4	-/66
Enterprise social networking (ESN) is the result of applying technologies that emerged on the public Internet within the workplaces of organizations to facilitate work-related communication and collaboration.	A. Richter & Riemer, 2013	B/54
ESNs are described by the actions one can do through ESNs: Search (Search for specific content using different criteria), Edit (Modifications of content in order to create an up-to-date version of the content.), Rate (Rate the content in terms of quality or suitability for the specific purpose.), Label (Mark content in order to allocate it to a certain topic to increase retrievability.), Clarify (Exchange different interpretations or opinions.), Notify (Notify others about relevant content, which already exists.), Share (Provide content in order to make it available to others.)	A. Richter, Heidemann et al., 2013, p. 5	B/44
ESNs are web-based intranet platforms that support users in contributing persistent objects to a shared pool, which enables public responses to these objects, allows profile information to be presented, and connects users via features like following, or friendship request. Examples of widely adopted platforms include weblogs, wikis, microblogs, and social networking platforms, which tend to converge into an integrated ESN where almost every interaction in the system leaves a persistent digital trace.	Behrendt, Richter, & Trier, 2014, p. 560	-/41
An ESN is a set of technologies that creates business value by connecting the members of an organization through profiles, updates, and notifications.	Li et al., 2012, p. 3	-/24
ESNs are web-based platforms that allow people to (1) communicate messages with specific coworkers or broadcast messages to everyone in the organization; (2) explicitly indicate or implicitly reveal particular coworkers as communication partners; (3) post, edit, and sort text and files linked to themselves or others; and (4) view the messages, connections, text, and files communicated, posted, edited and sorted by anyone else in their organization at any time of their choosing.	Mäntymäki & Riemer, 2016, p. 1042	C/24
Enterprise Social Networks (ESNs) allow companies to foster collaboration, communication and knowledge-sharing among employees.	K. Berger, Klier, Klier, & Richter, 2014, p. 1	B/13
Enterprise social networks (ESNs) are increasingly added to organizational IT infrastructures for more inclusive, open, and “social” communication. Many organizations recognize the potential benefits that ESNs can offer for improved team collaboration. [...] . We explain tensions within the effects of (1) unified, collective, yet relevant communication, (2) visible, active, yet controlled participation, (3) formalized, guiding, yet flexible processes, and (4) reusable, yet maturing information objects with team states, challenges and responses identified in team collaboration. [...]. Organizations use ESNs to promote widespread participation, build and maintain relationships, share information and improve collaboration, and to enable the networking of people and forming of communities. User interaction and communication behaviors may change in organizations due to the rise of “social” features available in ESNs.	Merz, Seeber, & Maier, 2015, p. 1	-/9
ESNs foster collaborations of employees across organizational boundaries. They are deployed for employees to share information (e.g., blogs, social bookmarks and files), interact with their colleagues and form communities. Among the shared content, there are multimedia content for various business purpose, such as employee training videos, product marketing videos and business event pictures.	Wen, Topkara, Cao, Lin, & Lai, 2012, p. 254	-/4

Table 8 **Definitions of ESN**
Source: Own illustration

<i>Term</i>	<i>IoT⁴</i>	<i>Definition</i>	<i>Source</i>	<i>IoS⁵</i>
ESN	2390	Enterprise Social Network – ESN refers to social networking on intranet social network platforms, which can functionally be compared to SNSs, but are only accessible in the enterprise intranet. Hence, the set of individuals is restricted to employees of an enterprise and the links mostly reflect professional relationships.	D. Richter et al., 2011, p. 91	B / 182
ESM	2040	Enterprise Social Media - Web-based platforms that allow workers to (1) communicate messages with specific coworkers or broadcast messages to everyone in the organization; (2) explicitly indicate or implicitly reveal particular coworkers as communication partners; (3) post, edit, and sort text and files linked to themselves or others; and (4) view the messages, connections, text, and files communicated, posted, edited, and sorted by anyone else in the organization at any time of their choosing.	Leonardi et al., 2013, p. 2	C / 423
ESS	902	Enterprise Social Software is primarily characterized by an abundance of user-generated content that can be easily analyzed. [...] ESS helps users to easily create own content and leads to a higher degree of networking of the employees. [...] Moreover, ESS is mostly used to support unstructured tasks and can be characterized as malleable end-user software with no clearly a priori defined usage scenarios, which makes it very difficult to address or measure the business benefits.	Herzog et al., 2013, p. 2	B/30
OSM	727	Organizational Social Media are technology artefacts, both material and virtual, that support various intra- and extra-organizational actors – including management, employees, and external stakeholders – in a multiplicity of organizational communication activities for producing user-generated content, developing and maintaining social relationships, or enabling other computer-mediated interactions and collaborations in the context of a specific organization and its environment.	Van Osch & Coursaris, 2013, p. 703	C/42
SIS	721	Social Information Systems are networked and web-based information systems based on social technologies and open collaboration. They feature: (1) Sociality: Community; information exchange; (2) Openness: large number of users, voluntary contributions; (3) Contributors: employees outside of formal hierarchy; (4) Content: user-generated; (5) Technology: lightweight tools, flexible structures.	Schlagwein, Schoder, & Fischbach, 2011, p. 5	A/20
SNS	606	A Social Network Site is a networked communication platform in which participants (1) have uniquely identifiable profiles that consist of user-supplied content, content provided by other users, and/or system-provided data; (2) can publicly articulate connections that can be viewed and traversed by others; and (3) can consume, produce, and/or interact with streams of user-generated content provided by their connections on the site.	Ellison & Boyd, 2013, p. 158	C / 13941
CSN	605	A Corporate Social Network is a collection of social networks, among which employees and other corporate constituents, may interact through their own, individual profiles. These profiles must be portable and able to collect and amalgamate information from that individual's interactions and knowledge sharing among all of his or her associated corporate networks. These networks are secure and private, open only to those constituencies identified by the enterprise. The connections fostered through CSNs are anchored in affinity and beneficial to individual members through the information they are able to obtain and share, creating knowledge capital that becomes attached to their profile and is visible to other network members. CSNs are used primarily to build trust and share knowledge on a peer to peer basis rather than through documents subject to information obsolescence. Network members share	Sena & Sena, 2008, p. 228	-/15

⁴ Impact of Term (IoT) = “[term]” search hits in google scholar, 21.02.2018

⁵ Impact of Source (IoS) = VHB-JOURQUAL 3 (2015) ranking / citations in google scholar, 21.02.2018

		knowledge in real-time, in effect creating a living corporate knowledge map within the network.		
CSS	229	Organizations started to use social software “behind the firewall” to support knowledge transfer and collaboration. Corporate Social Software facilitates user participation in creating web content (e.g., via wikis and weblogs) and allows for new ways of connecting, interacting and communicating with other people (e.g., via social networking services and microblogging).	A. Richter, Stocker, Müller, & Avram, 2013, p. 133	-/75
ESNS	155	Enterprise Social Network Sites include the foundational features associated with SNSs but are implemented within organizations, are typically formally sanctioned by management, and have the ability to restrict membership or interaction to members of a specific enterprise, thus enabling the flow of information that would be inappropriate for public, commercial social media tools	Ellison et al., 2015, p. 104	-/109
SME	74	Social Media in Enterprises (e.g., wikis, blogs) are introduced to support collaboration among employees and to improve knowledge management. [...] the use of internal social media applications is believed to improve communication and collaboration among employees, knowledge management, and product/service innovation, companies started to establish social media based networks with business partners and engage in public social media for purposes of marketing, customer relationship and reputation management, recruitment, and product/service.	Meske & Stieglitz, 2013, p. 61	-/67
ESSP	47	Organizations are increasingly adopting a diverse mix of organizational social software applications which is collectively referred here as Enterprise Social Software Platforms .	Kuegler et al., 2015, p. 90	A/45
OSWS	28	Organizational Social Web Sites are web sites providing social networking functionality and user-generated content – have recently attracted organizations’ attention as they promise to strengthen knowledge sharing and knowledge transfer capabilities.	Raeth et al., 2011, p. 2	A/14
OSSA	7	Organizational Social Software Applications – such as wikis, weblogs, and social networking sites – have attracted the attention of organizations as they promise to strengthen capabilities for knowledge sharing, collaboration, and innovation. Nowadays, OSSWs are bundled and integrated within enterprise social software platforms (ESSPs).	Kügler, Smolnik, & Raeth, 2013, p. 3635	C/32

Table 9 Definitions of ESN-alike artifacts

Source: Own illustration

We provide an overview on the terminological diversity in ESN research in Table 9. We decided to exclude further terms with less impact (e.g. SSE2.0 – social software in Enterprise 2.0).

3.4.2 Components of ESNs

As highlighted by the literature, ESNs consist of several components. In reference to Table 10 we present below, the core components of an ESN include the *network of users*, the *enterprise social software*, and the *content*.

ESN users can be classified as knowledge workers who typically solve elusive, complex, and unstructured problems (Fuchs-Kittowski, 2007; Kidd, 1994). We present a study that specifically focuses on ESN users in chapter 4 *The adoption and diffusion of ESNs*. The term network of ESN users can broadly be defined as the sum of all ESN users. It is generally

understood to represent the accumulated potential, accessible, and combinable knowledge of all ESN users, such as knowing what and whom other ESN users know, and is thus a key asset of the ESN (Burt, 2000; Leonardi, 2014).

Enterprise Social Software (ESS) is defined by Herzog et al. (2013) as “malleable end-user software with no clearly a priori defined usage scenarios” and can be seen as an empty “container,” which is specified by its own provided features and functionalities. As shown in Table 10 below, literature on ESN highlights the following technical core features of ESNs: chat, community, profile, (micro) blog, call, conferencing, calendar and scheduling, task management, survey, file exchange, and storage. Literature, furthermore, outlines the following technical key functions of ESNs: full text search, tagging, signals (follow, connect, recommend), commenting, rating, sharing, user status, location-based services, content co-creation, social analytics, user, and role management.

Much of the current literature on ESNs pays particular attention to knowledge objects, which can be seen as different types of digital *content* that is in general useful to support knowledge workers in solving a business related problem. Knowledge objects are blog posts, documents, profiles of ESN users, graphics, and audio or video files. Knowledge objects can be enriched by additional information, such as ratings, comments, or additional meta-information, like the current location of an ESN user or the total number of readers of a post.

We present relevant ESN studies and their referenced components, features and functions in Table 10.

3.4.3 Networks, their entities and the relationships between the entities

As a general premise, a network (e.g., a human body) consists of entities (e.g., cells) and is characterized by the relationship (e.g., autopoiesis) between these entities (Maturana & Varela, 1987). In the light of this analogy, an ESN should consist of social (human) and technical (artificial) entities that share a mutual relationship.

The social entities in ESNs are the knowledge workers, or individuals, who primarily use knowledge and communication assets for their daily work (Drucker, 1994; Kulkarni et al., 2006). Social entities are autonomous and distinct. Furthermore, there are two categories of technical entities, the IT artefacts, such as social software, and the knowledge objects, such as content or documents. Following Ackoff (1989) content can have different gradations, namely data, information, knowledge and wisdom. Those gradations build on each other. While data allows to create information, information is again the foundation to build knowledge which is again used to create wisdom (Rowley, 2007).

These entities interact constantly within the ESN. With these interactions, social entities co-create, shape, and influence other social entities, the technical entities, and the relationship between these two entities; thereby, re-characterizing the ESN. This re-characterization, or development of a consequent character, needs to be defined within a framework that allows its components to evolve without losing validity (see Figure 10).

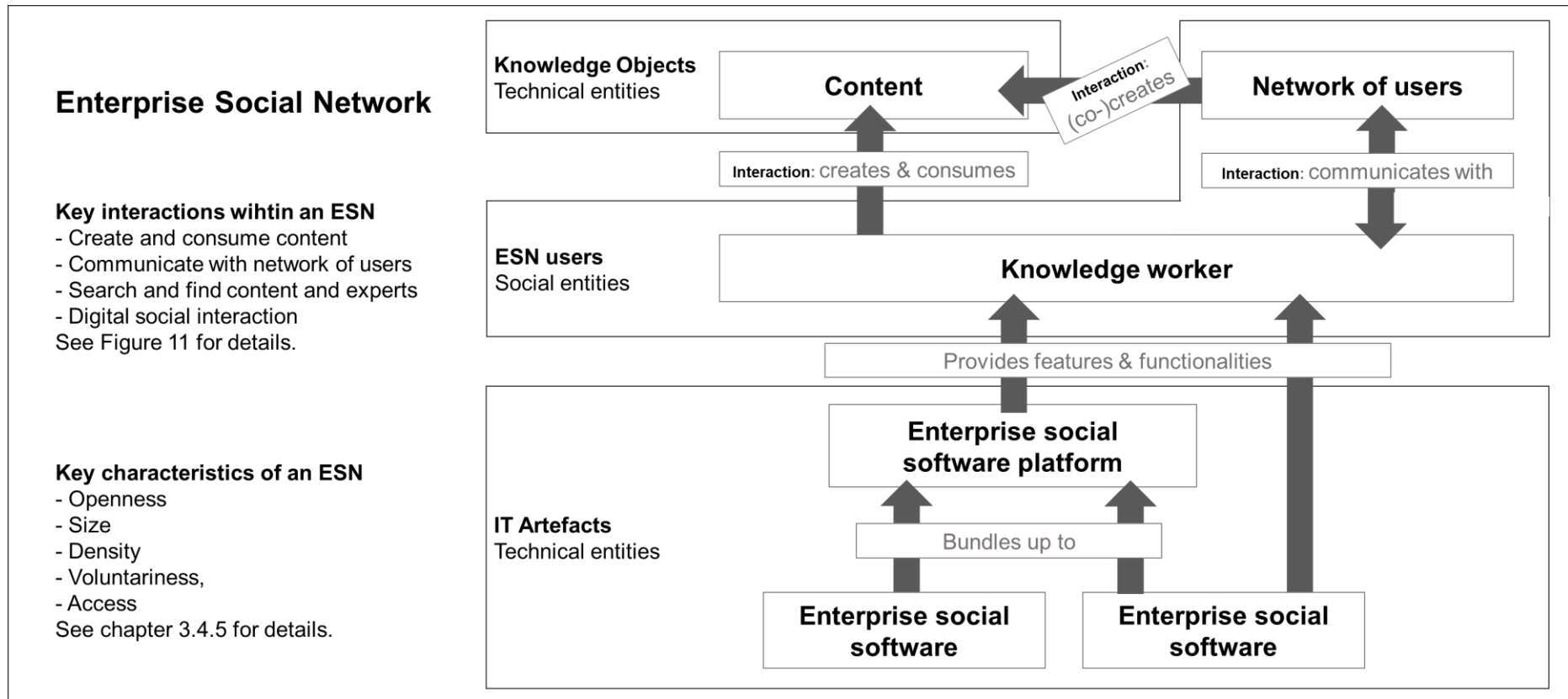


Figure 10 The ESN framework and its technical and social entities
Source: Own illustration

3.4.4 Interactions in ESNs and the network affordances

To solve the uncertainty in defining ESNs, the possible actions and interactions between its entities and components need to be identified to determine the affordances of an ESN. This is important, as a comprehensive but parsimonious definition of the sum of all affordances provides the basis to define what ESNs are. To approach a standard definition of what an ESN is through its affordances, we use the following premises:

A **network** is explained by the **relationship** between its **entities**.

An **ESN** is explained by its **affordances** provided by its **components**, features and functionalities.

To determine the affordances of an ESN, we join the technical and social entities arranged in Figure 10 with the features and core functions of ESNs presented in Table 10. This leads to a total sum of 58 affordances. Regarding the diversity and manifold purposes of an ESN, we capture the affordances via an interaction matrix presented in Figure 11.

The comprehensive interaction matrix below is read as following:

First, read from top to bottom by following the bold parts of the matrix.

Second, use the terms marked by an “x” to complete the description of an affordance.

This leads to the following sentence template: **Knowledge workers use ESS** (or ESSP running on foundation IT) to **do** [...] **what** [...] **via** [...] **through the feature** [...] (by the function [...]).

As an example, the bold arrow in Figure 11 can be followed to retrace the following two ESN affordances:

- **Knowledge Workers use ESS** to (co-)create explicit **content** via an **editor** through the feature **community**.
- **Knowledge Workers use ESS** to (co-)create explicit **content** via an **editor** through the feature **survey**.

Knowledge workers use features and functionalities provided by ESS or ESSP (running on foundation IT) to

		create & consume content										communicate with network of users						administrate
do		(Co-) Create	Publish	Comment	Rate / Assess	Classify / Label	Share	Search / Find	Follow	Manage	Contact / Communicate	Publish	Rate / Assess	Classify / Label	Search / Find	Follow	Manage	
what	Content Documents	x	x	x	x	x	x	x	x	x								
	Network of Users Community Knowledge Workers (peers) Personal Profiles (expertise, vita) Resource Availability										x	x	x	x		x	x	
	ESN																x	
via	Editors (written) Calls (verbal)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
through the feature	Chat	x	x	x	x	x	x	x	x	x	x	x	x	x			x	
	Community Profile (Micro-)Blog	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	
	Calls																	
	Conferencing																	
	Calendar																	
	Task Management																	
	Surveys																	
via	File Exchange/Storage	x		x	x	x	x	x	x	x								
(optional) by the function	Full Text Search																	
	Tagging					x	x	x	x									
	Signals									x	x							
	Commenting			x														
	Rating				x	x							x					
	Sharing							x	x									
	User Status												x					
	Location Based Services														x	x		
	Document Co-Creation		x		x													
	Social Analytics																	x
	User & Role Management										x							x

The **bold arrow** guides the reader through the interaction matrix and illustrates exemplarily that within an ESN: **Knowledge workers use features and functionalities** provided by **ESS** e.g. to **(co-)create** explicit **content** via an **editor** through the features **community** and **survey**

Figure 11 Interaction matrix on the possible affordances of an ESN
Source: Own illustration

3.4.5 ESN characteristics

ESNs are made to become deployed in organizations. To describe ESNs, it is therefore important to understand the different organizational contexts. Organizations are unique. However, literature shows that five key characteristics need to be taken into consideration when determining ESNs from an organizational point of view. These are openness, size, density, voluntariness, and access.

Openness refers to the degree to which content from ESN users is visible to others (Leonardi, 2014). Two approaches explain the openness of ESNs. First, the content is generally visible to others in all or within certain ESN features, such as blogs or profiles. Second, the ESN user grants access to the content to individuals or specific ESN users, groups, or communities. While “general” openness is a fixed parameter, the sharing attitude of ESN users outlines the “living” openness of an ESN.

The size of an ESN depends on two characteristics. These are the amount of ESN users and the amount of knowledge objects within the ESN. The distribution of different archetypes of ESN users (C. Oettl et al., 2018) among the population of ESN users, and the distribution of the different knowledge object types among the total amount of knowledge objects, offer a granular level of comparison.

Density is the degree of social proximity within an ESN. It is determined by the ratio of actual and possible social ties, and needs to be considered with regard to the size of the ESN (Smith, Hansen, & Gleave, 2009). Behrendt et al. (2014) presents a review on further standard network metrics such as degree of connectedness, betweenness centrality, and closeness centrality.

Voluntariness explains whether using ESN in an organization is voluntary (Moore & Benbasat, 1991). There are three gradations of ESN voluntariness in an organization: (1) the ESN is the sole communication and collaboration system (CCS); (2) ESN use is mandatory while alternative CCSs, such as email, exist; and (3) ESN is voluntary in use and there are alternative CCSs.

Access includes information about the technical devices, such as smartphones, tablets, or desktop PCs, by which an ESN can be accessed. This gives relevant insights into the mobile capabilities of an ESN, such as retrieving information from the ESN from a business partner site via smartphones.

3.4.6 Defining ESNs

We, next, introduce a description of the emerging socio-technical phenomenon of ESNs that has not been conclusively explained yet. Based on the ESN framework we present in Figure 10, we present a robust and unified definition of what ESNs are today. To craft this unified definition, we assimilated existing definitions and reassembled them in a comprehensible, composed and uniform way to define ESNs.

We define ESNs as following:

Short: *Enterprise Social Networks allow social entities—corporate knowledge workers represented by avatars—to interact with knowledge objects and other social entities. ESNs are differentiated by their collaboration affordances, technological features, and functionalities, and their level of voluntariness, openness, accessibility, size, and network density.*

Long: *ESNs are systems in which social entities (knowledge workers) use technical entities (IT artefacts, knowledge objects) to interact (written, verbal) with each other. These interactions are enabled through features and functionalities provided by IT artefacts (social software, foundation IT). Social software can be bundled to enterprise social software platforms. Within ESNs, social entities (1) [(co-)create, publish, comment, rate/assess, label, share, search follow and manage] ... [content, documents] within [chats, communities, profiles, (micro-)blogs], (2) use [voice calls, online-conferences, calendar, task management, surveys and file exchange/storage] and [user status, location based] functions to (a) communicate and collaborate with each other and (b) (co-)create and consume content (data, information, knowledge, wisdom, meta-knowledge). ESNs provide administrative features like social analytics and user & role management. ESNs can be classified as full and partial ESNs. Full ESNs provide all listed features and functionalities. Full ESNs are (i) voluntary in use instead of mandatory, (ii) the preferred vehicle for organizational communication instead of a complementary tool within existing information landscapes, (iii) transparent by standard (secure/restricted communication is possible according to confidentiality level of content) instead of closed communities, and (iv) equally usable on mobile and desktop devices.*

We developed a solid terminological foundation to facilitate future ESN research. A limitation of our results is that the framework, the concept matrix as well as the definition have to be seen as a snapshot of what ESNs are today. We, for example, included features and functionalities (e.g. call, location-based functionalities, task management) in our framework that, today, and to the best of the authors' knowledge, were not part of extant research. Thus, ESNs drift according to the evolutionary development of their social and technical components. Though we define ESNs as a framework to reflect this development, our definition requires constant monitoring and adjustment.

4 The adoption and diffusion of ESNs

4.1 Disclosure of integrated publication

This chapter contains among further discussions the word-by-word, complete actual content of the following “open access” publication of which I am the main author:

Oettl, C., Berger, T., Böhm, M., Wiesche, M., Krcmar, H., 2018. Archetypes of Enterprise Social Network Users, in: 51st Hawaii International Conference on System Sciences – HICSS, 2036–2045.

The exact take-over positions from the publication are documented in chapter 10.1.1. *Details on integrated publication* within *Appendix – Study 4*.

4.2 The study in a nutshell

Investments in enterprise social networks (ESNs) have increased rapidly in recent years. However, an ESN utilization intensity develops slowly, and there are a few well-grounded approaches to understand ESN usage. To elaborate on different archetypes of ESN users, we conducted a case study that comprised 28 interviews with a large IT services company. We present a model to characterize ESN users and classify them as archetypes based on the following two dimensions: individual openness to ESNs and perceived task-fit. We determine six archetypes of ESN users, namely, power users, limited users, reluctant users, repudiators, hidden champions, and question marks. From a theoretical viewpoint, this study contributes to the discussion around user typology of ESN users and the utilization intensity, acceptance, and value contribution of ESNs. In practice, results provide an orientation to organizations that intend to address both ESN users and the organization to increase the utilization intensity of ESNs.

4.3 Introduction

Enterprise social networks (ESNs) receive increasing attention as well as fast dissemination, especially in large organizations (Ellison et al., 2015; Leonardi et al., 2013). As shown in section 3.1, previous research identified various positive effects of ESN usage. However, even if ESNs are implemented in organizations, their value contribution appears unclear and the ESN utilization intensity develops not as fast as expected.

This was also observed in the company that was considered in this study. In 2014, a large multinational IT service provider started a radical metamorphosis from an email centered to an ESN centered organization. The implemented solution provides typical key functionalities that characterize an ESN as follows: individual personal profiles, online work communities and collaboration spaces, activity feeds, feedback functionality, instant messaging, tagging, global content sharing, analytical options to measure trends and community health, and similarity with established internet social networks. However, ESN utilization intensity develops slowly, and the value contribution of an ESN is perceived as ambiguous.

Based on this unique case, we investigate “*what are the archetypical users of ESN systems,*” “*how users value the ESN system they use,*” and “*what kind of obstacles do the users perceive*”

to increase understanding of reasons for the actual system use of ESN users. We believe that there is a lack of research on the archetypes of ESNs that includes the description, identification, and structuring of ESN users. This is a significant step to understand actual use and actual value contribution of ESNs.

This study is organized as follows: first, we introduce existing research and the theoretical background of this study. Second, we describe the research method as well as the process of data collection and analysis. In the results section, we depict a model of identified archetypes of ESN users that specially focuses on their perceived added values and obstacles. We proceed by discussing results, theory, and implications of the study before providing a conclusion.

4.4 Archetypes of ESN Users

4.4.1 Theoretical background

This study presents a model that characterizes ESN users and classifies them into archetypes based on the following two dimensions: *individual openness to ESNs* and *perceived task-fit*.

We present a model that is based on (1) literature on ESNs (usage; effects through ESNs; management, leadership and governance for ESNs; value contribution and performance measurement; cultural aspects; architecture and design; theories, research design, and methods) (Rossmann & Stei, 2016), (2) literature relevant for user typification, and (3) existing technology acceptance theories and models.

Although literature relevant for user typification exists, to the best of the authors' knowledge, there is no approach that combines individual and productivity related dimensions. The diffusion of innovations (DOI) literature (Rogers, 2003) distinguish users by how quickly they adopt new technologies, and user typification mentioned by Velasquez et al. (2014) and Jahnke (2010) is based on a user's role within an online community. They state that it is not feasible to expect that all individuals use a system with equal frequency. This when combined with Orlikowski (1992) who demonstrated that different roles also lead to conflicts of interest and incentives it seems understandable that users do not use a system with similar frequency. In contrast, this is not in line with the premise that knowledge workers are generally interested in the best possible access to knowledge to raise their productivity. Third, participation inequality mentioned in topical literature on social networks, online communities, and discussion forums indicates that a small minority of users perform most of the work and identifies contributors and consumers (Preece & Shneiderman, 2009) (Okoli, Mehdi, Mesgari, Nielsen, & Lanamäki, 2014).

However, none of the aforementioned literature on user typification combines individual and task related dimensions and neither is particularly aimed at ESN users. It is necessary to consider existing models and theories of IS acceptance to craft a model that characterizes users of ESNs.

Influencing factors of user adoption are intensively discussed within existing technology acceptance theories and models (Samaradiwakara & Gunawardena, 2014). The most prevalent and recognized models include (1) the "task-technology fit" (TTF) model that proposes a

theoretical model that focuses on task characteristics and technology characteristics (2) the “technology acceptance model” (TAM) and its advancements (TAM2; TAM3) that center on independent variables including perceived usefulness and perceived ease of use, and (3) the “unified theory of acceptance and use of technology” (UTAUT) that focuses on the expected future impact (e.g., performance expectancy and effort expectancy) of IS usage (Fred D. Davis, 1989), (Goodhue & Thompson, 1995), (Venkatesh & Bala, 2008), (Venkatesh, Morris, Davis, & Davis, 2003).

4.4.2 Research method

In this section, we present the research design as well as the process with which the developed model of archetypes of ESN users is crafted. This study comprises of a purely exploratory research design of a single case study with 28 participants that follow the guidelines listed by Yin (2014).

We selected this company as it changed their internal communication system from an email centered towards an ESN centered approach in a radical manner. Specifically, the company introduced its ESN as strategically important while it was voluntary in use and fitted perfectly to synthesize (1) trait related and (2) task and outcome related drivers for ESN use.

We retrieved the data from 28 expert interviews from more than 10000 potential ESN users ranging from 16 min to 40 min between May 2015 and July 2015. We selected participants in consultation with three representatives of the partner company (ESN project lead, roll-out manager, and ambassador) and determined the following premises: (1) participants hold different business roles that are typical for industrial companies (human resources, engineering, leadership, business support) to mitigate a potential deviation of the results based on the specifics of an IT company; (2) participants are selected well-balanced in terms of their age, sex, and an estimate of their attitude towards ESNs from the experience of the partner company; and (3) participants are approached by ambassadors to convey voluntariness of participation and openness for feedback.

We designed the interview guide with two major premises: (1) task and outcome related as well as individual trait related constructs from existing user acceptance models are addressed via open questions, and (2) the "individual reaction to using IT" is part of the basic concept that underlies all user acceptance models (a) functions as the chronological starting point for the study and (b) defocuses constructs from existing body of knowledge related to an initial intention to use (prior to the ESN roll out).

Although extant studies offer a well acknowledged toolbox of existing user acceptance models, we decided to not fully apply those as we were interested in the detailed explanations and developments of ESN usage. Therefore, we determine that it is reasonable to explore the social aspects of ESN use by asking open questions to subsequently match the explored constructs with existing models. Second, we aim to keep the model simple to focus on task and outcome related as well as individual trait related constructs.

The interview guide, which can be found in appendix section 10.1.3, covers questions on the following topics: (1) demographics, business role, (mandate description and requirements) and

communication style of interviewees; (2) use of ESNs (active/passive; task-related/non-task-related); (3) perceived added values and problems/obstacles of ESNs; (4) personal attitude towards social networks in general and especially towards ESNs; and (5) perceived future potential of ESNs and expected impact on interviewees.

We analyzed the data in the following three steps: First, we applied the structuring content analysis (Mayring, 2010; Miles & Huberman, 1994) to synthesize relevant constructs from the interview data. Second, we matched the identified constructs (a) to task and outcome as well as (b) individual trait relatedness, and (c) to constructs of existing user acceptance models, to analyze and understand differences to constructs of existing user acceptance models. Third, we coded the interviews.

In order to determine task-fit we coded: (a) ESN usage, frequency, and relative importance, (b) perceived task and outcome related added value and obstacles. In order to determine openness to ESNs we coded: (a) attitude towards ESNs, (b) perceived ability to use ESNs, (c) promotion of and resistance against ESNs, (d) perceived future potential/importance of ESNs, and (e) perceived environmental influence (as shown in Table 11).

Furthermore, we classified the identified variables for each interviewee based on the data as low, medium, and high. Subsequently, we classified the subjects in our model with the two dimensions perceived task fit and individual openness to ESNs. Finally, we analyzed and discussed findings, compared them with existing literature, derived implications for theory and practice, and assessed the predictive validity of the findings to represent the population of ESN users.

4.4.3 Results

Our study revealed significant aspects relevant to understand the characteristics of different ESN users. As findings, we present (1) a model to affiliate the population of ESN users to archetypical user groups as well as a summary of identified perceived (2) added values and (3) obstacles.

4.4.3.1 Archetypes of ESN users

As a result of the structuring content analysis (Miles & Huberman, 1994), we identified six different user types, namely repudiator, limited user, reluctant user, hidden champion, and question mark. We present these different user types in Figure 12 and distinguish them by the following dimensions: *individual openness to ESNs* and *perceived task-fit*.

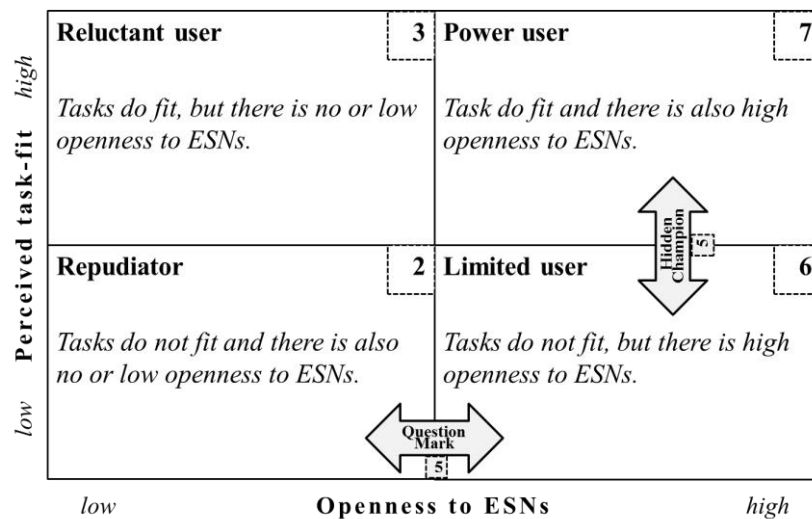


Figure 12 Archetypes of ESN users

Source: Own illustration

In the following, each of the six identified user types are briefly characterized. The characterizations for a power user, a limited user, a reluctant user, and the repudiator are based on the data from seven interviews, six interviews, three interviews, and two interviews, respectively. Each of the two mixed archetypes were deduced from the data of five interviews (as shown in Table 12).

As shown in Table 13, demographics of the interviewees are homogenous for each archetype and do not imply major trends. The data reveals the means of organizational tenure as well as the perceived ESN knowledge and experience of interviewees per archetype. The latter is measured via a 5-point Likert scale (ranging from 1 = low to 5 = high) and represents self-perceptions of the interviewees.

4.4.3.1.1 Power user

Power users are individuals characterized by a high utilization frequency from several times a day up to a permanent use. They use the ESN actively and as job-related. Therefore, power users appear to strongly contribute to the value adding content generation in the social network of an organization. This user type is extremely open to the decreasing importance of hierarchy and distance within an organization as experienced with the introduction of an ESN. Pronounced IT-competence of the power user paired with high curiosity and anticipation emphasizes the enthusiasm to attempt new things. Individuals of this type are very familiar with using the social network and fully capable of taking advantage of the same, such as performing tasks for daily business with more efficiency, to reach a wider range of colleagues or to support team work and global cooperation. Power users pursue the approach to work mainly via the social network. Power users highly perceive the creation of values when performing business task. Power users focus on high utilization intensity, and therefore analyze their environment and attempt to inspire colleagues through high levels of promotion and support of the system.

According to power users, the system significantly contributes to the success of the company in the future, and thus the ESN is considered as highly important by them.

4.4.3.1.2 Repudiator

A repudiator is extremely opposite to a power user. This is significantly reflected in the low utilization frequency of the ESN, which includes mainly a passive usage from only once or twice a month to gather information of a general type. Although repudiators state that they are open to new things, the ESN must first be obviously connected with added values for them. This is not the case and repudiators do not see any added value with the system, and thus their openness to the ESN and subsequently their intention to use the system is low. The social network is not seen as an aid. According to repudiators, the communication for their type of work is better covered by other existing tools in the firm such as email or instant messaging. Additionally, the reversal of the push to pull mechanism for gathering information is rejected by individuals of this type and they refuse to pull information from the executives. Conversely, they prefer that information is sent to them. A mandatory use of the system is rejected by repudiators and is underlined by resistance. The ESN is considered by them as unnecessary and not important. Thus, they predict only a low future potential for the ESN.

4.4.3.1.3 Limited user

Limited users have an open attitude to the introduction and usage of the ESN within the organization. Their utilization frequency of the system from a weekly to a daily basis is mainly passive to gather general information, which is not related to a specific task. Despite the low task-fit, limited users have high levels of intention toward a more task-related usage of the system. In an exemplary manner for a low task-fit, limited users mentioned tasks that include work with personal or security sensitive data. Due to the low levels of support for these users' tasks and their daily business, the ESN is only slightly important for them. Despite perceived obstacles of a low task-fit, limited users are always interested in increased utilization intensity to expand their own usage of the ESN. This underlines their intention to push the usage of the system to a higher level. Limited users consider ESN as highly important for the future as well as decisive for the future success of the company.

4.4.3.1.4 Reluctant user

Reluctant users have a medium utilization frequency of the ESN from a weekly to a daily basis. This usage is slightly more passive than active although it is supported by a high task-fit and consequently contributes to a high support level for business related tasks such as using the system for document collaboration or as a knowledge database. Reluctant users perceive task-fit as high, and thus equal to that perceived by power users. Reluctant users like the idea of introducing the ESN within the organization although they do not perceive an increase in efficiency while using it. According to them, the system is not user friendly, and it is not a tool, that is recognized as well-engineered or fully utilized. Reluctant users are used to working with email to perform business tasks. Individuals of this user type exhibit resistance against the ESN, and therefore they try to circumvent its use. According to them, results are achieved better and faster with other established tools within the organization. Additionally, the ESN is observed

to contribute to information overload. Although they use the system, reluctant users perceive added values only to a very low extent. They appreciate the system to procure general and not task-related information or for private exchange. Reluctant users characterize ESN usage as leading to duplication and a decrease in productivity. Reluctant users work around ESN despite a high task-fit. They use the system only when they are forced to such as if other colleagues indirectly push them to do so. Reluctant users reject the mandatory or exclusive use of the ESN. Interestingly, reluctant users believe that an ESN maximizes the success of a company although it will not be the decisive and only medium for an organization's communication.

4.4.3.1.5 Hidden champion

In addition to the pre-defined four user types, two further mixed user types were identified. A hidden champion is characterized by a high openness to ESNs and a medium task-fit level. Thus, hidden champions are classified halfway between limited and power users.

4.4.3.1.6 Question mark

The second mixed user type, namely a question mark, is characterized by a medium openness to ESNs and a low task-fit level. Thus, Question Marks are classified halfway between repudiators and limited users.

Dimension	Coding from content analysis	Description	Examples (interview quotes)	Similarities to constructs
Openness to ESNs	a) Attitude towards ESNs	Includes individuals' attitude to the ESN; e.g., traits as curiosity and enthusiasm that describe their individual openness to the ESN.	High: <i>"I found this very exciting; I was looking forward to work with a modern tool like our ESN."</i> [ESNHR06] Low: <i>"I do not care whether the social network is available or not. I am passionless about it."</i> [ESNLD06]	Computer Playfulness (Webster & Martocchio, 1992) / TAM3, Perceived Enjoyment (Venkatesh & Morris, 2000)/TAM3
	b) Perceived ability to use ESNs	Includes perceived ability to use the ESN; and also covers opinions about the necessity of trainings that describes their openness to the ESN.	High: <i>"It is really well done and I find the handling, once you have used it, not difficult."</i> [ESNSU05] Low: <i>"It's a fact that I'm not accustomed to communicate via the ESN."</i> [ESNLD03]	Computer Self-Efficacy (Compeau & Higgins, 1995)/TAM3, Complexity (Rogers, 2003)/DOI
	c) Promotion of and resistance against ESNs	Includes individuals' attitude and behavior to promote and support the ESN within the organization; it also covers negative promotion and resistance against the ESN.	Promotion: <i>"I use it actively and need those who want to work with me to do this too. [...] If possible, I use other tools to direct people towards the social network."</i> [ESNEN04] Resistance: <i>"If it were up to me, we could abolish that."</i> [ESNHR05]	Computer Anxiety (Venkatesh & Morris, 2000)/TAM3

	d) Perceived future potential and importance of ESNs	Includes individuals' opinion about the importance and future potential of the ESN that describes their openness to the ESN.	High: <i>"The future is a globalized world, we have a lot of knowledge to exchange, and our network is actually the best way to filter content quickly. [...] It has a very high value and it will still contribute very strongly to how our company will develop."</i> [ESNHR07] Low: <i>"Well, if such a network is properly used, then it could have a meaning."</i> [ESNEN02]	Long-Term Consequences (Thompson, Higgins, & Howell, 1991)
	e) Perceived environmental influence	Includes perceptions about the usage behavior of coworkers regarding the ESN as well as perceptions about the environment (e.g. the organization, executives) that affect their individual openness to the ESN.	High: <i>"My boss communicates mainly via the social network. Of course, you are asked to use the social network too."</i> [ESNSU06] Low: <i>"But nothing happens: no articles, no news, no discussions are posted, and since it is similar seen by colleagues, we do not use it."</i> [ESNEN02]	Subjective Norm (Venkatesh & Davis, 2000)/TAM3, Collective System Usage (Burton-Jones & Hubona, 2005)
<i>Perceived Task-Fit</i>	a) Usage type, frequency and relative importance	Includes the type of business related usage of the ESN as well as the frequency; and also covers their opinion about the relative importance of the ESN to assess the individual fit between job tasks and ESN.	High: <i>"I try to maximize my efficiency. For the special thing I do, the social network is very helpful. Without the social network, I could not cope with these volumes in quality and time."</i> [ESNEN04] Low: <i>"It's not important for me, I do not use it."</i> [ESNLD06]	Job Relevance (Venkatesh & Davis, 2000)/TAM3, Job Fit (Thompson et al., 1991)
	b) Perceived task & outcome related added value and obstacles	Includes business related perceived added values and obstacles that affect the individual fit between job tasks and ESNs.	Added value: <i>"I also use the ESN to put together collaborative notes. We use it for brainstorming or to prepare training materials."</i> [ESNHR04] Obstacle: <i>"I would like to post all sorts of mass mails via the social network [...] unfortunately I cannot, as not all people use the network and the usage is not obligatory."</i> [ESNEN05]	Output Quality (Venkatesh & Davis, 2000)/ TAM3, Task Requirements and Tool Functionality (Goodhue & Thompson, 1995)/TTF Relative Advantage(Rogers, 2003)/DOI

Table 11 **Coding categories for archetype characterization**
Source: Own illustration

<i>Archetype</i>	<i>Engineering</i>	<i>HR</i>	<i>Leadership</i>	<i>Support</i>	<i>Total</i>
Power User	1	4	1	1	7
Limited User	0	2	2	2	6
Reluctant User	1	1	1	0	3
Repudiator	1	0	1	0	2
<i>Mixed Archetype</i>					
Hidden Champion	1	1	1	2	5
Question Mark	1	0	1	3	5

Table 12 Interviewees and their archetype characterization

Source: Own illustration

	<i>Age Class</i>					<i>sex (mean)</i> $f = 1/m = 2$	<i>tenure (years)</i>	<i>experience</i> (1-5 scale)
	<i>18-24</i>	<i>25-34</i>	<i>35-44</i>	<i>45-54</i>	<i>55+</i>			
<i>Power User</i>	0	5	0	1	1	1.4	12.1	4.4
<i>Limited User</i>	0	3	2	1	0	1.3	5.8	3.2
<i>Reluctant User</i>	0	1	1	0	1	1.7	17.7	3.3
<i>Repudiator</i>	0	0	1	1	0	1.5	9.5	3.5
<i>Hidden Champion</i>	3	0	1	1	0	1.8	6.6	3.4
<i>Question Mark</i>	1	1	1	1	1	1.4	13.4	2.4
<i>Total</i>	4	10	6	5	3	1.5	10.4	3.4

Table 13 Demographics by archetypes

Source: Own illustration

4.4.3.2 Perceived values by archetypes

The overall results are strongly in line with previous study. Table 14 presents an overview. Here, improved communication across hierarchical and organizational boundaries (DiMicco et al., 2008; Zhang et al., 2010), improved knowledge transfer and expert search (Bughin, 2008; Fulk & Yuan, 2013; Leonardi, 2014; Mansour et al., 2011), enhanced innovational strength (H. Hasan & Pfaff, 2006; Leonardi, 2014; Mäntymäki & Riemer, 2014), as well as the establishment and strengthening of social ties (Jackson et al., 2007; Thom-Santelli et al., 2008), were confirmed as benefits of ESN.

The communication via ESN is more direct, open, and transparent. Information and content are shared easily. ESN users decide whenever they want to read the latest information from the network, and this appeared to lead to a reduction in emails and, interestingly to shorter content. Members can spread information to large communities and even to the entire ESN.

<i>Archetype</i>	<i>Perceived Added Value</i>	<i>n</i>
Power User	- high business-related task support	7
	- enabler for new and more efficient methods of working together	7
	- increased efficiency (substitution of prevalent tools)	5
	- enhanced meta knowledge and improved expert search	5
	- contribution to corporate success	3
	- creation of innovational strength	1
Limited User	- enhanced information handling, e.g. addressing communities or gathering company related information	4
	- information and experts is obtained be found faster via ESNs	2
Reluctant User	- useful to derive general information outside business related tasks	2
Repudiator	- ESNs provide no added value	2

Table 14 Perceived added values by archetypes

Source: Own illustration

Colleagues are represented via personal profiles, and they are visible as authors and available for questions from other members. This fosters new relationships and strengthens social ties. Additionally, the ESN serves as a central and continual knowledge base with the ability to access or edit content at any time. This avoids duplication where users redundantly save data and information in their mailboxes such as while using email. The ESN information can be posted and collected thematically within communities based on the interests of their members.

The network is also used for documentation such as users coordinating and communicating content. This avoids work duplication and may help in increasing employee performance. The ESN provides an easy way for its members to ask questions to a large target audience, without even knowing a single colleague or expert. Conversely, members may also purposefully pose their questions within communities to deliberately restrict the circle of colleagues such as when their question matches the field of a certain community.

Hence, for questions to a broad audience, the enquirers may get a faster response from other ESN members than they may expect when compared to email. Furthermore, simultaneous topics for group discussions may be created when individuals ask questions within communities. The search for colleagues or experts may be accelerated via the ESN since connections between members and their content are transparent and visible for third parties (Leonardi, 2014). This is further facilitated by the fact that individuals represent their interests and activities via a personal profile. Contacts and friendships also foster idea generation within communities and between colleagues. Thus, the innovative power of any organization is enhanced. Ideas can be generated in real time or simultaneously such as for brainstorming

colleagues working together on a collaborative note. Furthermore, a few respondents believe that the ESN creates an additional competitive advantage such as prospective new employees that prefer to work for an organization with this modern communication tool.

With respect to power users and limited users, the ESN improves communication and information sharing, and therefore allows a more efficient way to work together. In contrast, reluctant users only perceive added values in the procurement of general information outside their business such as sharing news about the firm or exchanging non-job-related content. Ultimately, repudiators do not see any value contribution through an ESN.

4.4.3.3 Perceived obstacles by archetypes

Power users mainly criticize that the cultural change has not occurred as yet within an organization. According to them, voluntary use prevents a higher generation of value across the whole enterprise. Specifically, executives must increasingly use the system in a productive way that includes a bi-directional communication and collaboration with employees. Power users are likely to reach more colleagues via the ESN. They believe that an ESN should be the exclusive tool for certain operations within the organization. Conversely, repudiators complain that the ESN doesn't support their daily business tasks and that it lacks basic requirements. An even worse implication is that they perceive ESN use to lead to work duplication and work overhead.

A serious stated problem is that the responsibility is passed from leadership level to employees. According to repudiators, the ESN is not a solution for better communication within the organization. Limited users are restricted in their usage of ESNs due to a broader range of obstacles as follows. First, they believe that the ESN is not yet fully accepted within the organization. This and voluntary use impede increased utilization of the system. In order to reach colleagues, the use of email is necessary for limited users. This results in work duplication, which impedes the increased utilization of the system. According to limited users, the network and communities should be more restrictive such as prioritizing business activities. Limited users complain about the excessive amount of tools in use, i.e., the ESN should be the only archive for any type of information. In contrast, they believe that internal communications cannot be limited only to the network such as the sharing of sensitive data or working on security-related projects. A reason is that encrypted data cannot be transmitted via the ESN. Lack of trust in the system further contributes to limited usage such as the absence of assurance in individuals about the circle of recipients of a message and that recipients read a message on time. Therefore, the system is not very suitable for direct communication. Additionally, the ESN is designated for internal communication, and thus it is not appropriate for communication and work with clients. Reluctant users believe that the system continues to contribute to information overload. According to them, it is difficult to determine important or relevant information via the ESN. Their usage of the ESN leads to work duplication and work overhead. The system is confusing to them and this results in a high amount of information albeit with poor quality. Furthermore, they are concerned about the absence of uniform rules about how to use the ESN and they remain uncertain about the circle of recipients of a message and that answers do not appear in a timely manner. Moreover, the tagging of the importance of

information is omitted as reluctant users expect it from other systems such as filtering the importance of information via a sender of an email. In a manner similar to limited users, reluctant users complain that the ESN is not yet fully accepted within the company. An overview of the perceived obstacles is listed in Table 15.

<i>Archetype</i>	<i>Perceived Obstacles</i>	<i>n</i>
Power User	- Not an exclusive tool and voluntary use	6
	- limited availability of/to colleagues	5
	- lack of cultural change within the firm	3
	- could be more user friendly	2
Limited User	- no exclusive tool, voluntary and unrestricted usage	6
	- limited business-related task support	4
	- lack of acceptance within the firm	4
	- lack of trust and uncertainty in usage	3
	- not applicable for sensitive data	3
	- lack of knowledge in using the system	2
	- leads to work duplication	2
Reluctant User	- lack of acceptance within the firm	3
	- leads to information overload	3
	- leads to work duplication/overhead	2
	- difficult and confusing usage	2
	- lack of trust and uncertainty in usage	2
	- voluntary and unrestricted usage	1
Repudiator	- low/no business-related task support and no perceived added value	2
	- unclear responsibilities	2
	- personal work load situation	2
	- leads to work duplication/overhead	2
	- people important to them reject ESNs	2
	- lacks basic requirements to be useful	1
	- leads to information overload	1

Table 15 Perceived obstacles by archetypes

Source: Own illustration

4.4.4 Discussion

The case study shows that different archetypes of ESN users exist. Furthermore, we reveal that ESN users are characterized via the introduced model by the following dimensions: *openness to ESN* and *perceived task-fit*.

4.4.4.1 Implications for theory and practice

An individual perception of “what is in it for me?” appears to be reflected in the constructs that were coded. This supports the crafted dimensions as valid and purposeful. Specifically, users already experienced the ESN, and thus it appears logical and feasible that the critical drivers of ESN use can be condensed via the sense-making and work-productivity-rising constructs that were deduced from the interview data. Therefore, in contrast to recent studies by Leonardi

(Leonardi, 2014), we added an axis “perceived task-fit” that captures the importance and relevance of task-fit.

The dimensions and constructs coded show similarities with the constructs in existing literature (see Table 11). This seems understandable as we consulted existing user acceptance models to prepare the interview guide. However, none of the existing studies include the model components as a whole. This might be attributed to the novelty of the approach to investigate the archetypes of ESN users.

In contrast to age, sex, tenure, and ESN experience, only the participants’ business role predicts the identified archetypes. While it is understandable that human resources and business support indicates a generation of higher task-fit and openness to ESN scores given that their jobs require good communication skills, surprisingly, leaders who actually introduced the ESN do not. This might refer to the explicit request for open feedback about their personal experience with ESN use. Similar to leaders, engineers do not indicate a trend towards certain archetypes within the model. This might be related to the idea that engineers are not perceived as “people persons” but perceived as interested in technical solutions. These two influences may balance the results such that they do not show a noticeable trend. An interesting next step for a future study could include a better understanding of the impact of business role on the identified archetypes. In summary, both diversity in the sample and the argumentative stable results strongly support the generalizability of the described archetypes within the introduced model.

The introduced model centers on individual perceptions and tendencies of such users that are typical for large industrial organizations, and thus the presented archetypes strongly indicate that they are also generalizable to other ESNs in other organizations.

Furthermore, it is remarkable that identified archetypes show similarities in characteristics with the vocabulary indicated by Rogers (2003) who distinguished the adoption of new technology by users as follows: power user and limited user vs. innovator, early adopter and early majority, reluctant user vs. late majority as well as repudiator vs. laggards. In contrast to Rogers (2003), this study does not reflect the chronological aspect as this case study was conducted after the ESN was introduced twenty-two months ago.

Except for an obvious link in their dominant usage type (active/passive), characteristics of archetypes do not indicate a link to certain roles in any kind of community of practice as described in literature (Jahnke, 2010; Velasquez et al., 2014). However, the general perspective that it is not feasible to expect that all individuals should use a system with equal frequency is reflected by openness to ESNs and actual use of ESNs scores where both differ significantly. Furthermore, characteristics of archetypes did not indicate a link to a conflict of interest and incentives of ESN users (Orlikowski, 1992). The rather passive usage of ESN users indicates accordance with the premise that a small minority does most of the work in social networks and online communities (Okoli et al., 2014; Preece & Shneiderman, 2009).

An unanticipated finding was that visual analysis depicted a noticeable “development path” for the identified archetypes beginning with the question mark via limited user and hidden champion to a power user. As presented in Figure 13, the “development path” could be used by

organizations to actively manage an ESN within the IT landscape in a geared and purposeful manner. This would allow strategic management to develop both employees and an organization individually according to the desired ESN strategy and according to the characteristics of different archetypes. For example, in order to increase usage, power users could be selected and appointed as "ambassadors"; motivational speeches could be given to "question marks"; and business processes could be analyzed and transformed to stronger ingrain ESNs in the IT landscape and thereby address limited users and hidden champions. Therefore, one could infer that the model also allows assessing the staff of a firm according to their appropriateness with respect to their level, efforts towards development, and their potential to contribute in firms of the future.

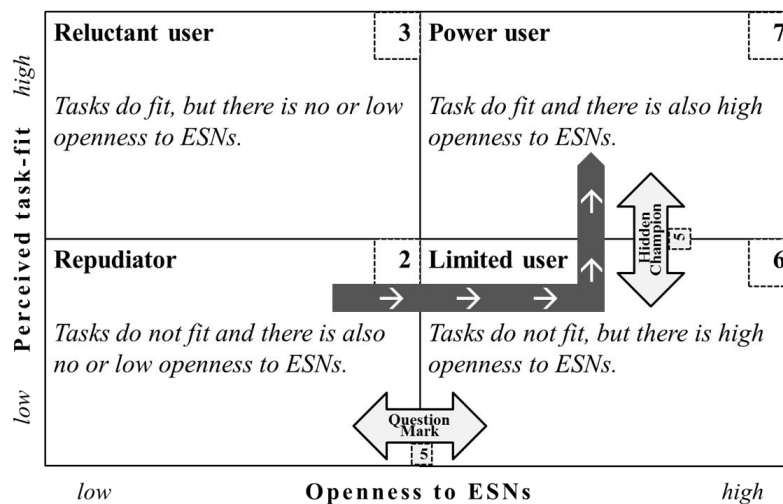


Figure 13 Development path of archetypes of ESN users

Source: Own illustration

4.4.4.2 Threats for validity

Subsequently, we discuss possible threats for the validity of the purely exploratory research design (comprised of a single case study with $n=28$) to understand the value of the presented results.

First, although, common sense indicates that employees in the IT domain would be rather open to social software, the sample appears carefully selected and reasonable to represent an industry independent organizational setup that support results that are not deviated by potential specifics of an IT company. In contrast to prior research that focuses on single business units (Leonardi, 2014), the aim of the study involves investigating ESN users on a general company level, a future study with a sample comprised of more companies could help in strengthening the validity of the presented results.

Second, the last three interviews do not reveal new aspects, and thus the sample size appears reasonable and adequate for the exploratory approach.

Third, the comparison of (a) recognized definitions of ESNs with (b) the actual ESN key functionalities at the case company (see introduction section) strongly indicate that the results are not deviated by the specifics of the actual ESN design.

Fourth, a further potential limitation of the study is that findings are obtained from the perceptions and opinions of the subjects and may be influenced by a “social desirability bias”. We carefully crafted our interview guide to avoid the same, such as frequently asked for examples, and moved to fictitious situations whenever we felt that interviewees were uncomfortable with the situation (Miles & Huberman, 1994).

4.4.5 Conclusion

The aim of the study involves increasing an understanding of the usage of ESNs within large organizations. In order to examine whether members of an ESN are divided into different user types, we posed the following research questions: “*what are the archetypical users of ESN systems,*” “*how users value the ESN system they use,*” and “*what kind of obstacles they perceive*”.

Although, previous studies were relevant for user typification, there is a paucity of studies proposing an approach that combines individual and productivity related dimensions. This study presents a model to (a) characterize ESN users and (b) classify them as archetypes based on the following two dimensions: *openness to ESNs* and *perceived task-fit*.

The results indicated four archetypes of ESN users, namely power users, limited users, reluctant users, and repudiators and two mixed user types, namely hidden champions and question marks. Additionally, the results show that users perceive added values and obstacles of ESNs differently.

From a practical viewpoint, the model contributes to the challenges for the organizational development of large organizations that intend to increase ESN use. We suggest future study to comprise of field experiments that use the introduced approach of characterizing ESN users in a large business unit and develop and apply measures to address different archetypes based on their characteristics to improve ESN utilization intensity.

From a theoretical viewpoint, the study contributes to the discussion on user typification, user acceptance, utilization intensity, and value contribution of ESNs in large organizations.

5 The value contribution of ESNs

5.1 The study in a nutshell

Enterprise Social Networks (ESNs) are introduced as powerful and comprehensive communication and collaboration platforms. However, the relationship between ESN use and its value contribution is not clear. Our findings show that ESN experience is decisive to unleash a significant positive effect of ESN use on task efficiency. Surprisingly, our findings show that ESN experience outperforms interconnectedness as a key predictor for employee performance. This study appears to be the first study to quantify the value contribution of ESNs. These results contribute to existing theories involving value of ESNs and provide a novel approach for fact-based management of ESNs in practice.

5.2 Introduction

In 2014, a large multinational IT service provider (hereafter referred to as “ITC”) with more than 100,000 employees introduced an ESN solution to push organizational performance. The implemented solution provides typical key functionalities that characterize an ESN as follows: individual personal profiles, online work communities and collaboration spaces, activity feeds, feedback functionality, instant messaging, tagging, global content sharing, analytical options to measure trends and community health, and similarity with established public social networks. However, ESN utilization intensity develops slowly, and the value contribution of the ESN is perceived as ambiguous.

As presented in section 3.1, (1) literature identified numerous positive effects of ESN use (Leonardi, 2014; Mäntymäki & Riemer, 2014; C. Oettl et al., 2018), (2) utilization intensity develops slowly (Bughin, 2013; Kiron et al., 2013; Li et al., 2012) and (3) the value contribution of ESN use appears unclear and existing studies rely on perceived benefits and drawbacks of individuals instead of empirical findings (Herzog et al., 2014; C. Oettl et al., 2018). Overall, the focus in research moves “from identifying benefits towards ways of quantifying benefits” of ESN (Williams et al., 2013) as “[...] the return on investment remains stubbornly difficult to identify and quantify [...], and [...] how to measure the impact of social media remains elusive [...]” (Kane et al., 2010).

Therefore, we investigate: *How and why does ESN use create business value?* More specifically, our research objectives are (1) to develop a measuring approach that links ESN use and business value and (2) to empirically investigate the relationship between ESN use and its business value contribution.

5.3 ESNs are not a natural – quantifying the relationship between use and performance

5.3.1 Theoretical background on business value measurement and success of information systems

For the past several years, the verification of a direct connection between IS and productivity or even business value has proven to be complex and problematic. Financial metrics (e.g. classic return on invest (ROI) calculations) were found insufficient to quantify the value contribution

of IS (Kaske, Kugler, & Smolnik, 2012). In the 1990s, the complexity of an organization's business environment led to a phenomenon known as the *productivity paradox* (Brynjolfsson, 1993). The *productivity paradox* claims that there is no demonstrable positive connection between IT investments and their value contribution e.g. due to time lags between the IT investment and its effects, including transition costs, incorrect handling or weak change management, or a fast-changing organizational environment. A central study on the value of IS is the *IS success model* modeled by DeLone & McLean, which predicts the *organizational impact* of IS based on its *system quality* and *information quality*, and which received a great deal of attention (DeLone & McLean, 1992). The *D&M IS Success Model* was intensively challenged and discussed. In 2003, DeLone and McLean extended their model by adding *service quality* as an additional predictor and regarding *system use* as an appropriate measure of IS success (DeLone & McLean, 2003). Another influencing contribution to IS success measurement was the article "IT doesn't Matter," which labeled IT as a "commodity," and stated that it was not critical any longer for reaching competitive advantage within a market (Carr, 2003). The article recommends that organizations should spend less on IT, follow and not lead the way in deploying IT, and should focus on vulnerabilities, not on opportunities (Carr, 2003). Based on the studies of DeLone & McLean (1992, 2002) and Seddon (1999), Kulkarni *et al.* (2006) introduced a *knowledge management success model* that incorporates both *knowledge quality* and *knowledge use* as outcome variables, which can be seen as a first attempt to capture social and knowledge driven outcomes in IS research. Again based on the work of DeLone & McLean, Gable *et al.* (2008) introduced an *IS-Impact Measurement Model*. The *IS-Impact Measurement Model* highlights *IT Functions* as an important predictor of to-date and future impacts of IS. It furthermore identifies *organizational impact* as the key figure for future impacts and—in contrary to DeLone and McLean (2003)—additionally defines *organizational impact* as the sum of *individual impacts*. However, the introduced concepts remain mainly explorative and the contextual suitability of the concepts was barely verified. This was also found by a meta-literature review of 22 literature reviews covering more than 200 research papers, which concluded that "studies so far did not find a positive correlation between IS investments and economic performance" (Schryen, 2010). Overall, the process of creating internal and competitive value remains unexplained (Schryen, 2013). We summarize relevant outcome variables to determine IS success in Table 16.

Theory	intangible value contribution		tangible value contribution	
	construct	definition	construct	definition
DeLone and McLean (2003)			net benefits	Net benefits capture the balance of positive and negative impacts on the individual, group and firm level e.g. cost savings, incremental additional sales, reduced search costs...)
Carr (2003)	Advantage	Individual advantages Competitive advantage Strategic advantage Technological advantage Cost advantage Efficiency advantage	financial results	The difference between earnings before interest and taxes and earnings before taxes
Schryen (2010)	Growth of immaterial value (Intangibles)	e.g. improved capabilities, superior knowledge on an organizational level or better decision making.	Accounting performance	Cost-oriented, materials management-oriented and profit-oriented ratios.
	Process performance	Increased productivity		
Gable et al. (2008)	Quality	Future impacts through system and information quality	Impact	Individual or organizational impacts to date
C. Cooper, Martin, and Kiernan (2010)	Vitality	Vitality examines fundamental measures of user activity	Business value	Business value measures go even further by looking at how capabilities enable an organization to improve its key process indicators.
	Capability	Capability measures dig deeper into assessing how IS are being used to improve the capabilities of the employees.		
Torkzadeh and Doll (1999)	Task innovation	This application helps me create new ideas and to try out innovative ideas.	Task productivity	This application saves me time, it increases my productivity and allows me to accomplish more work than would otherwise be possible.
	Customer satisfaction	This application improves customer service and satisfaction and helps me meet customer needs.		
	Management control	This application helps management control the work process and improves management control and management control performance.		
Gattiker and Goodhue (2005)			Task efficiency	Employees need less time since system has been implemented. The system saves time. System is less time-consuming. System helps employees to be more productive.

Table 16 Outcome variables of value contribution
Source: Own illustration

Actual system use seems to be antecedent and the consequence of both IS success and business value (C. Cooper et al., 2010; Gable et al., 2008). Thus, use is defined as a key moderating factor between the IS and business success (Fred D. Davis, 1989). It seems reasonable to express the success of an IS via IS use. However, one is not allowed to draw conclusions on the business value generated by IS use. Here, the prerequisite for system use to become a valid factor of business value creation is that tasks performed via an IS actually create business value. Use multiplies this business value contribution. Interestingly, value contribution, either confirmed or perceived, seems to only be pertinent when such use is voluntary (DeLone & McLean, 1992).

Theory indicates that individual value contribution generated by IS use determines business value contribution. Here, “individual impacts collectively result in organizational impacts” and “positive impacts on individual productivity, resulting in organizational productivity improvements” (DeLone & McLean, 2003). Thus, individual impact—as a determinant of IS-Impact—is an antecedent of organizational performance.

5.3.2 Theoretical background on business value measurement and success of ESNs

Next, we present theory on ESN success measurement. Overall, existing studies provide promising theoretical ideas, approaches, frameworks and concepts. However, those need to substantially develop towards applicable measuring instruments.

The return on contribution (ROC—the ratio of people who benefit from content, and the people who initially created and published it) helps to measure and understand the usage of an ESN but is not related to business value (Muller, Freyne, Dugan, Millen, & Thom-Santelli, 2009). The explorative approach of Wen et al. (2012) investigated the correlation between the amount of multimedia content shared by individuals and the billable hours of 10,000 consultants between 2006 and 2008. They found that high performers (billable hours > 1500) tend to have more multimedia-sharing activities in their social networks. Despite the promising approach, results lack causality and significance. With their qualitative approach, Meske and Stieglitz (2013) interviewed 16 managers from large corporations and found that communication (50.25%) access to in-house knowledge (50.25%) and collaboration (37.50%) improved through ESN usage. Interviews provide important insights for increasing understanding on a certain topic and here, specifically, function as a sounding board or source for KPI-related quantification. Shami, Nichols, and Chen (2014) investigated the correlation of ESN usage and the individual performance rating of managers. With their research design of use data of more than 70,000 employees over 3 years they found that ESN usage is positively associated with performance ratings, however, results remain without significance and causality. Also investment calculation approaches were reinvented and merged with approaches from other disciplines (marketing, training theory): RONI, *risk of not investing*, a qualitative decision making framework that contrasts effects of investing or not investing (Happ & Wolf, 2009); ROE, *return on expectations*, a qualitative decision making method that assesses the expectations of affected stakeholders (Kirkpatrick & Kirkpatrick, 2009).

5.3.3 Theoretical background on the role of business value measurement in technology acceptance theory

The vast body of technology acceptance theory aims to explain utilization intensity of information systems. Here, the most relevant models are: the “task-technology fit model” (TTFM) that focuses *task* and *technology* characteristics (Goodhue & Thompson, 1995); the “innovation diffusion theory” (IDT) that explains the diffusion of innovation based on the “process by which an innovation is communicated through certain channels over time among the members of a social system” (Rogers, 2003); the “unified theory of acceptance and use of technology” (UTAUT) that predicts the *use behavior* by the expected future impact via the key constructs of *performance expectancy* and *effort expectancy* (Venkatesh et al., 2003) and; the “technology acceptance model 3” (TAM3) and its two preliminary stages (TAM and TAM2) that center *perceived usefulness* and *perceived ease of use* as key determinants of individual IT adoption namely *use behavior* (Fred D. Davis, 1989; Venkatesh & Bala, 2008).

These models consist of constructs that predict an individual reaction to using IT (future use behavior) based on perceived and quantified value contribution. However, they do not explain the value contribution of using a specific IT. Interestingly, constructs of perceived individual value contribution are integral part of technology acceptance models. However, as shown in Table 17, constructs of objective or quantified individual value contribution are missing or only play a subordinate role:

Tangible value contribution		Intangible value contribution		Source
Construct	Definition	Construct	Definition	
		Individual performance impact	the IS “[...] has a large, positive impact on my effectiveness and productivity in my job”(Goodhue & Thompson, 1995).	TTFM (Goodhue & Thompson, 1995)
Result demonstrability	“the tangibility of the results of using the innovation, including their observability and communicability” (Moore & Benbasat, 1991, p. 195)	Relative advantage	“the degree to which an innovation is perceived as being better than its precursor” (Moore & Benbasat, 1991, p. 195)	IDT (Rogers, 2003)
		Perceived usefulness	“the degree to which a person believes that using a particular system would enhance his or her job performance” (Fred D. Davis, 1989; Fred D Davis, Bagozzi, & Warshaw, 1989).	UTAUT (Venkatesh et al., 2003)
		Relative advantage	“the degree to which an innovation is perceived as being better than its precursor” (Moore & Benbasat, 1991, p. 195).	

Result demonstrability	“the tangibility of the results of using the innovation, including their observability and communicability” (Moore & Benbasat, 1991, p. 195)	Job relevance	“The degree to which an individual believes that the target system is applicable to his or her job” (Venkatesh & Davis, 2000).	TAM3 (Fred D. Davis, 1989; Venkatesh & Bala, 2008)
Objective usability	A “comparison of systems based on the actual level (rather than perceptions) of effort required to completing specific tasks” (Venkatesh, 2000, pp. 350–351).	Output quality	“the degree to which an individual believes that the system performs his or her job tasks well” (Venkatesh & Davis, 2000).	

Table 17 Constructs of tangible and intangible value contribution in technology acceptance theory
Source: Own illustration

5.3.4 Conceptual background and hypothesis development

To deduce an end-to-end view on the value contribution of ESN use (see Figure 14), we subsequently introduce existing research on technology acceptance to impart the role of use behavior as determinant of ESN value creation, business value measurement of IT use to outline existing obstacles and promising starting points to quantify the value contribution of ESN use, and business value measurement of ESN use to understand efforts already made to quantify the value contribution of ESN use.

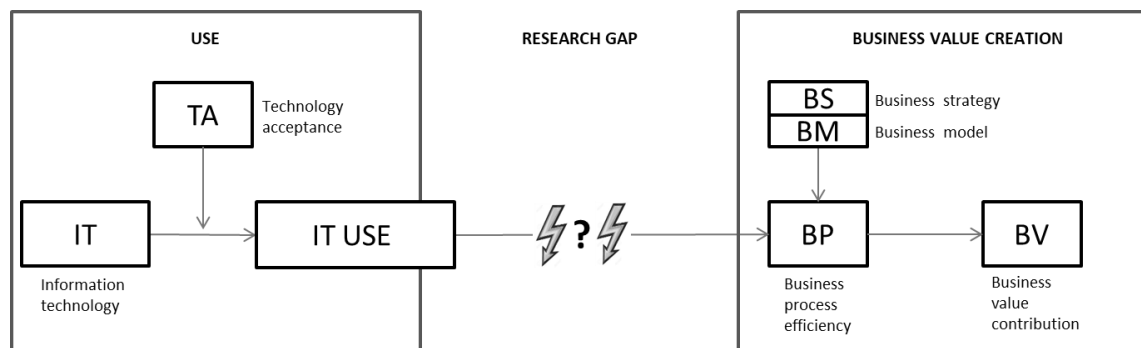


Figure 14 Research gap
Source: Own illustration

5.3.4.1 The relationship between system use and its value contribution

The IS literature started to investigate the relationship between system use and its value contribution decades ago (e.g., DeLone & McLean, 1992; Seddon et al., 1999). However, the actual verification of a direct connection between IS use and its value contribution proved to be complex and problematic and “studies so far have not found a positive correlation between IS investments and economic performance” (Schryen, 2010). Based on our review of past research on IS success measurement, we argue that tangible metrics like *task efficiency* (Gattiker & Goodhue, 2005) are necessary to explain the value contribution of system use.

The existing body of research on the relationship between system use and its value contribution emphasizes system use as a central and pivotal construct in the system-use-to-value-contribution chain (e.g., Gable et al., 2008; Torkzadeh & Doll, 1999). Based on our review of past research on technology acceptance and IS success measurement, *we argue*, as shown in Figure 14, *that the actual system use is antecedent to and the consequence of its value contribution.*

5.3.4.2 The relationship between system use and its value contribution in enterprise social network use

With the rise of Enterprise 2.0 (McAfee, 2006), IS success measurement received new impulses and researchers investigated the value contribution of ESNs. Studies found that IS success measurement models have to add additional dimensions like emphasizing social rather than the technical aspects of social software (boyd & Ellison, 2007; Steinhueser, Smolnik, & Hoppe, 2011). Despite their valuable and meaningful approaches, current studies provide useful frameworks and concepts rather than applicable measuring instruments to confirm the value contribution of ESN use (e.g., Meske & Stieglitz, 2013; Muller et al., 2009; Shami et al., 2014; Wen et al., 2012).

Overall, existing studies "lack a valid theoretical and empirical basis, and are indicators for the potential of enterprise social software in practice rather than valid models" (Herzog et al., 2013). The major barriers of ESN success measurement are: missing definitions of what to measure, unclear responsibilities and missing resources, as well as technical and regulatory issues regarding data collection (Herzog et al., 2014). Based on our review of ESN success measurement literature, *we state that existing approaches describe and identify benefits rather than explain and confirm the value contribution of ESN use.* Furthermore, quantitative studies on ESN success measurement approaches are, to the best of the authors' knowledge, nonexistent.

5.3.4.3 Differentiating the value contribution of ESN use

The rapid dissemination of ESNs in organizations led to increased empirical research on the business impact of ESN use (Ellison et al., 2015; Leonardi et al., 2013). Specifically, ESNs are internal, web-based, user-centered social platforms that allow their users to communicate with colleagues, to identify potential communication partners, to create, publish, or edit their own content, and to access content created by other users (boyd & Ellison, 2007; Leonardi et al., 2013). Thus, ESN users are encouraged to actively and openly contribute (e.g. to discussions or by voicing criticism) with a "sharing is caring" attitude (C. Oettl et al., 2018). A central feature of ESNs are personalized user profiles that link authors to content and characterize ESNs as social platforms (boyd & Ellison, 2007).

A major benefit of ESNs is that messages from colleagues are visible to other users (message transparency) and the structure of their communication networks is explained (network translucence) (Leonardi, 2014). Overall, previous research identified numerous positive effects of ESN usage: e.g. improved identification of experts (Li et al., 2012), improved communication across hierarchical and organizational boundaries (DiMicco et al., 2008; Zhang

et al., 2010), improved knowledge transfer and expert search (Bughin, 2008; Fulk & Yuan, 2013; Leonardi, 2014; Mansour et al., 2011), enhanced innovational strength (H. Hasan & Pfaff, 2006; Leonardi, 2014; Mäntymäki & Riemer, 2014), as well as the establishment and strengthening of social ties (Jackson et al., 2007; Thom-Santelli et al., 2008). Based on our review of past studies on ESN benefits, *we argue that ESN use (unidimensional construct) will generally lead to increased individual value contribution* (see Figure 15).

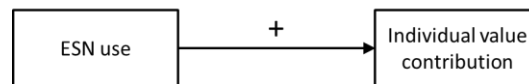


Figure 15 Proposition 1: An increase in ESN use causes an increase in the individual value contribution

Source: Own illustration

Organizations strive to efficiently generate, develop and distribute business-relevant information within today's knowledge-intensive, dynamic, decentralized, virtual, and project-driven work environments (Strother et al., 2012). Especially, as most prevalent information and communication landscapes (email, intranet, wiki, instant messaging...) lead to information overload rather than to oblige the rising demand for a performant processing of business relevant information (Sobotta & Hummel, 2015; Verdot et al., 2011). Here, ESNs are discussed as a means of providing a fast and flexible alternative to lift communication, information sharing, and collaboration at the required level of organizational performance (Leonardi et al., 2013; Moser et al., 2002). We therefore expect ESN use to *improve individual and organizational performance by supporting knowledge workers' access to organizational knowledge (knowledge search and expert search) compared with prevalent (email centric) information landscapes*.

Hypothesis 1 (H1). (H1a) Using an ESN for knowledge search has a positive effect on task efficiency. (H1b) Using an ESN for expert search also has a positive effect on task efficiency (see Figure 16).

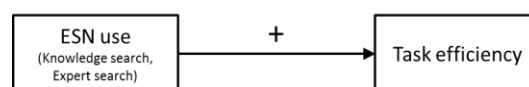


Figure 16 Hypothesis H1 – the effect of ESN use on task efficiency

Source: Own illustration

5.3.4.4 The moderating role of ESN experience

With hypothesis H1 we presume that an increase in ESN use causes an increase in the individual value contribution. However, the observed phenomenon within the case company—stagnating actual ESN use (Bughin, 2013; Li et al., 2012)—indicates the existence of moderating constructs that allow or prohibit users to experience the suggested increase in the individual value contribution. To reflect moderating forces of system use, we deduce *experience with the system* from technology acceptance theory (e.g. Venkatesh & Bala, 2008) to moderate the

relationship between ESN use and individual value contribution. For an overview on the role of experience in existing models see Venkatesh et al., 2003, 433-435. *We argue that ESN experience positively moderates the relationship between ESN use and individual value contribution* (see Figure 17).

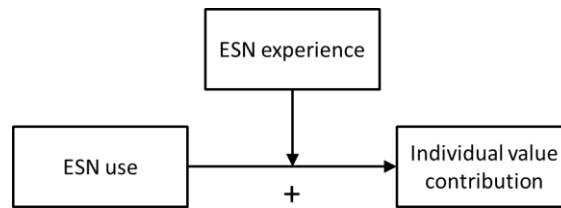


Figure 17 Proposition 2: ESN experience positively moderates the positive effect of ESN use on the individual value contribution

Source: Own illustration

As shown in Figure 18, we operationalize proposition 2 as follows:

Hypothesis 2 (H2). (H2a) ESN experience positively moderates the positive effect of using an ESN for knowledge search on task efficiency. (H2b) ESN experience positively moderates the positive effect of using an ESN for expert search on task efficiency.

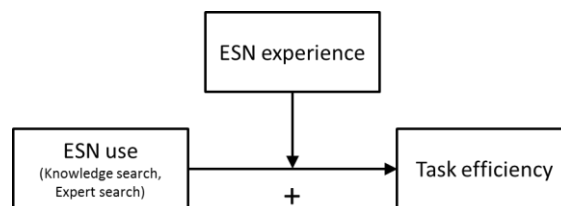


Figure 18 Hypothesis H2 – the moderation effect of ESN experience

Source: Own illustration

5.3.5 Method

To test our hypotheses, we conducted a two-factor field experiment at ITC. We introduce the chosen research model in Figure 19, We selected ITC as it changed its internal communication system from a classic, email-centered information landscape towards an ESN-centered approach in a radical manner. Remarkably, ITC introduced its ESN as strategically important while it was voluntary in use. This constellation fits perfectly with our investigation of ESN use and individual value contribution based on the individuals' intrinsic motivation to use an ESN (Moore & Benbasat, 1991). ITC agreed to scientifically investigate the value contribution of its ESN. ITC assigned six resources to support this experiment (two project sponsors from upper management and four employees that volunteered to support the project). We subsequently introduce the process of instrument and experiment development as well as the process of data collection and data analysis. We followed the principles and methods recommended by (Bhattacharjee, 2012) throughout the scientific process.

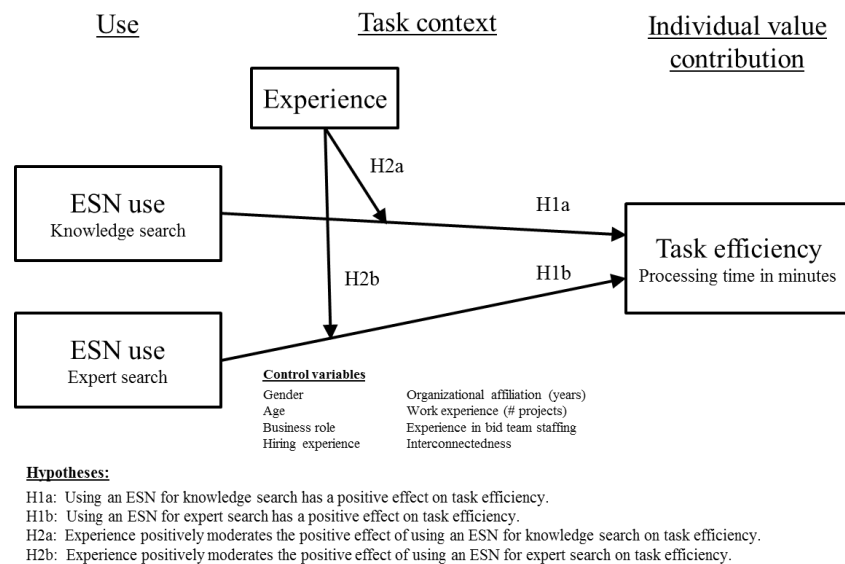


Figure 19 Research model and hypotheses

Source: Own illustration

5.3.5.1 Instrument development

Much of the current literature on the business value measurement of IS pays particular attention to *business processes* as a promising proxy technique to quantify IS value contribution. Here, studies emphasize the predictive effects of an IS within the interplay of business strategy, business model, and business processes (Krcmar, 2015; Wigand, Picot, & Reichwald, 1998). Previous research has established that business processes inherently contribute to corporate business value and asks: How does ESN use enhance business processes performance (Krcmar, 2015).

Recent studies suggest to apply the approach of measuring the impact of ESN use on business process performance in future research (C. Cooper et al., 2010; Herzog et al., 2013; A. Richter, Heidemann et al., 2013). With this approach, ESN success measurement becomes tangible and applicable in practice. In this context, use cases—individual tasks a business process consists of—are considered appropriate for predicting and quantifying the advantageousness of ESN use as compared with use of existing CLASSIC information landscapes (Herzog & Richter, 2016). To link IS use and its business value, we operationalize *individual value contribution* based on studies such as that conducted by Fred D. Davis (1989), Gattiker and Goodhue (2005) and Urbach, Smolnik, and Riempp (2010) who show that *task efficiency* is an appropriate construct for measuring and comparing the advantageousness of different IS. The *task efficiency* construct allows quantification of the extent to which an IS enables employees to be more productive (Gattiker & Goodhue, 2005).

We present an instrument to quantify the value contribution of ESNs in Figure 20. It is based on the following theoretical building blocks: First, applicable approaches for quantifying the value contribution of ESNs are nonexistent (Herzog et al., 2014). Second, *vitality* (use, explained by technology acceptance, e.g. Venkatesh and Bala (2008)) is obligatory for utilizing

capabilities (individual value from ESN use), which sum up and create *business value* on a corporate level (C. Cooper et al., 2010; DeLone & McLean, 2003). Third, a use-case-based experiment allows measuring the impact of ESN use as compared with prevalent information landscapes through the *task efficiency* construct (Gattiker & Goodhue, 2005) while the use-case represents tasks a business processes consists of (Herzog & Richter, 2016; Krcmar, 2015). With this approach, we integrate ESN use into the organizational value chain.

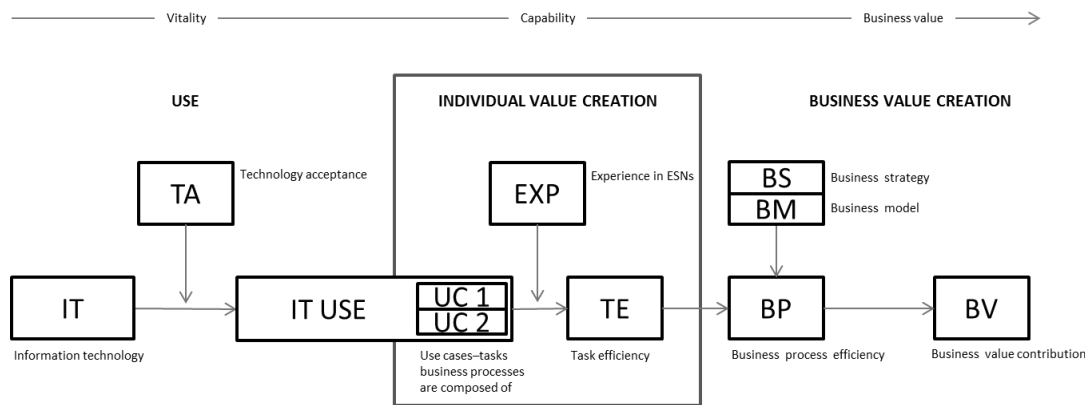


Figure 20 Instrument development: an end-to-end ESN value measurement framework

Source : Own illustration based on C. Cooper et al. (2010), DeLone and McLean (2003), Gattiker and Goodhue (2005), Herzog and Richter (2016), Krcmar (2015), Venkatesh and Bala (2008)

To strengthen the validity of the experiment, we include several control variables, namely gender, age, business role, hiring experience, organizational affiliation, work experience, experience in bid team staffing and interconnectedness, to evaluate the impact of individual characteristics. We present an overview on the main items in Table 18.

Construct	Question	Literature Sources	Application
Task efficiency	TE1: Since we implemented <<system>>, employees need less time to do their jobs. TE2: <<System>> helps employees to be more productive	Gattiker and Goodhue (2005, p. 584)	Measured via timestamps.
Experience	Individual are accustomed to <<system>> and hold hands-on experience with <<system>>.	Venkatesh and Bala (2008, pp. 281–282)	Experience is determined by the level of hands-on experience with a system.
Voluntariness	Using << system>> is voluntary in my organization.	Moore and Benbasat (1991, p. 216)	The use of ESN is voluntary for all employees at ITC.

Table 18 Conceptualization of constructs
Source: Own illustration

5.3.5.2 Experimental Design

We, next, introduce our chosen experimental design: a two-factor field experiment. As shown in Table 19, our experimental design consists of two factors, namely *information landscape* and *ESN experience*. Within this experimental setup, knowledge workers perform tasks from the category “knowledge search” and “expert search.”

		Task efficiency Processing time per use-case			
		Knowledge search	Expert search		
Information landscape	CLASSIC (baseline)	1	2	Low	ESN experience
				High	
	ESN	3	4	Low	
				High	

Table 19 Research design for the two-factor field experiment
Source: Own illustration

The *information landscape* factor consists of two levels, namely *classic* and *ESN*. The *classic* level consists of legacy information systems of ITC, namely intranet, email, instant messenger, mobile/telephone and the personal network of the knowledge worker. The *ESN* level represents the ESN of ITC as described in the introduction. It is characterized as an all-in-one social information, communication and collaboration system that allows knowledge workers to search, generate and follow content (e.g. a post) via signals, tags and collaboration spaces (communities) and search and follow experts through profiles, tags and signals.

The *ESN experience* factor also consists of two levels, namely *high* and *low*. Experience is determined by the level of hands-on experience with a system (Venkatesh & Bala, 2008). We furthermore see ESN experience as indicating a user's perceived individual value contribution. We argue that the broad, subjective and often emotional discussion about the value contribution of ESNs emphasizes that ESN usage is strongly predicted by personal traits, demographics and experiences of individuals (Venkatesh et al., 2003; Venkatesh & Bala, 2008). To melt the variety of personal traits (e.g. curiosity, openness, expertise...) down to one identifier that represents a knowledge worker's ESN related attitude, *ESN experience* was chosen. We further argue that someone open to ESN (C. Oettl et al., 2018) or with a high task fit (Goodhue & Thompson, 1995) will use the ESN and therefore increase his/her *ESN experience*. The relevance of experience is additionally confirmed by its role as key moderator within technology acceptance theory (Venkatesh & Bala, 2008).

We chose a tripartite setup for the experiment. In part one of the survey, participants are asked to contribute to the experiment by disclosing information about their demographics, capabilities and experiences. In part two of the survey—the core of the experiment—participants are asked to perform a knowledge search and an expert search. In part three of the survey, participants are asked to provide feedback.

We, next, provide a detailed description of the experimental setup.

We chose to separate survey one from the actual experiment to be able to distinguish the subjects in *experienced* and *inexperienced* ESN users by capturing and assessing their demographics, general experience with information systems and general work experience. In the survey part one, participants are asked to perform a self-assessment of their ESN experience by answering the question: “How would you assess your experience, knowledge and skills in using ESNs?” with a four-point Likert scale. To determine the factor *ESN experience*, we coded “very good” and “good” as *experienced* users and “partly available” and “very limited” as *inexperienced* users. According to their ESN experience, the participants were randomly assigned to either the scenarios information landscape *ESN* or *CLASSIC*.

We provide a detailed description of the tripartite survey setup in Table 20.

		The three phases of the experiment			
		1	2		3
		Pre-experiment survey	Knowledge search	Expert search	Feedback survey
Solution rate	Missed	0	6	10	0
	Passed	156	69	32	61
Information landscape	Classic	85	29	7	37
	ESN	71	40	25	24
ESN experience	Unexperienced	91	35	15	28
	Experienced	65	34	17	33
Sex	Female	59	28	12	24
	Male	97	41	20	37
Age	18-24	40	22	8	19
	25-29	29	13	8	10
	30-39	24	10	5	7
	40-49	31	12	7	12
	50+	30	10	4	11
	No answer	2	2	0	2
Interconnectedness	Very strong	17	5	2	4
	Strong	93	44	23	41
	Weak	36	15	5	12
	Very weak	3	2	2	2
	Not at all	1	0	0	0
	No answer	6	3	0	2
Organizational affiliation	1-5	58	29	12	24
	6-10	34	14	9	12
	11-20	32	10	6	10
	20+	27	12	4	12
	No answer	5	4	1	3
Experience in # of hires	0	78	37	19	35
	1-10	42	17	5	13
	11-20	11	4	2	3
	21-50	8	5	2	5
	50+	9	2	2	1
	No answer	8	4	2	4
Experience in # of bid teams staffed	0	117	55	28	53
	1-5	15	8	3	5
	6-10	1	1	0	1
	11-20	1	1	0	1
	20+	10	2	0	1
	No answer	12	2	1	0
Work experience in # of projects	0	1	0	0	0
	1-5	91	41	21	39
	6-10	32	15	7	12
	11-20	11	4	2	3
	20+	8	1	0	1
	No answer	13	8	2	6
Participants total		156	75	42	61

Table 20 Overview on tripartite experimental setup

Source: Own illustration

We thoroughly address the existing challenges of quantifying the value of IT in both research and practice within the experimental design. Here, powerful but simple use-cases are decisive for allowing valid conclusions to be drawn from the results. Feasible but challenging tasks were elaborated on that fulfill the precondition for being carried out on a regular base and are well known in large organizations but—concurrently—are not performed for the experiments' specific purpose as part of a daily routine. The types of tasks used are *knowledge search* and *expert search*. The chosen experimental setup ensures that both tasks were able to be successfully resolved in all scenarios. Within the *knowledge search* scenario, participants are asked to onboard a new employee and prepare the personnel work equipment (laptop, mobile, log-in credentials, etc.) for a new employee so that the equipment is available as of the first

working day. To be able to manage the onboarding process, participants are asked to quickly locate and document all line items of a checklist from the official corporate guideline. Within the *expert search* scenario, the participants need to identify and suggest three candidates in a bid-team staffing scenario inspired by a real case. Here, the participants need to find and suggest candidates that fit a real-world resource request. Search results and processing times were filled and saved within an internal survey tool. Processing times were automatically measured via time stamps that were taken when answers were saved. To mitigate potential technical and processual problems, the participants additionally documented both start and end times for each task manually within the survey tool. Finally, participants were asked to document breaks and interruptions. The quality of the answers in the use-case *knowledge search* is determined by comparing results with the official guideline of onboarding new hires. The guideline comprises twelve explicit and obligatory items. The resource request within the use-case *expert search* was designed and created in cooperation with six employees of the partner company. The resource request was evaluated from a human resource and bid management perspective. Subject matter experts of the partner company evaluated the quality of the identified and suggested experts from a human resource and bid management perspective. The second part of the experiment was conducted by $n=77$ participants for knowledge search, of which $n=42$ also performed the task expert search.

Within survey three, the participants give feedback via comments and evaluate their perceived level of difficulty of the performed tasks. This third part of the experiment was conducted by $n=68$ participants.

5.3.5.3 Pre-study

The quality of the experimental design was ensured by conducting a pre-test comprising $n=6$ participants. We conducted the pre-test to discover technical or logical problems with the survey, to verify the understandability of the problem definitions and the feasibility of the tasks. We excluded the scores of the pre-test from the actual experiment data.

5.3.5.4 Data collection

The sample of this experimental design consists of knowledge workers within a large multinational organization. Via the personal contacts of six business sponsors, we contacted $n=400$ employees from the partner company from different departments holding diverse business mandates. The experiment was conducted between February and March 2017. The participation was voluntary, and the gathered data was handled anonymized.

5.3.5.5 Data analysis

To test the differences between the groups of our experimental design, we chose Wilcoxon's rank-sum test because parametric test assumptions have not been met. Wilcoxon's rank-sum test, as the non-parametric equivalent of the independent t-test, works on the principle of ranking the data to analyze data that does not rely on parametric assumptions. Ranking the data causes some loss in information regarding the differences between scores. Therefore, parametric tests are seen as more powerful than their parametric counterparts. This increased statistical power refers to the ability of a test to find an effect that genuinely exists and mitigates

the chance of accepting the fact that there is no difference between groups when, in reality, a difference exists, which is also known as Type II error (Field, Miles, & Field, 2012). However, the increased chance of a Type II error is true only if the assumptions of the parametric test are met. This shows that the statistical power of the non-parametric test is not derogated in our case.

We decided to use only those scores in our analysis that were coded as good or "sufficient quality" search results. One could argue that even a search result with poor quality can be perceived as a positive result by the employee, since from his/her perspective, the task has been completed. However, we think that the company would suffer from these kinds of poor-quality results—at least in the mid- and long-term—and decided to work only with data whose search results could be categorized as having good or sufficient quality. We identified outliers (a score that is very different from the rest of the data) that differed from the sample mean by more than three times the standard deviation and carefully analyzed whether to remove those scores from the sample.

We, next, provide detailed information about the decisions taken during data analysis. Thereby we explain per scenario why we chose to use Wilcoxon's rank-sum test, how we coded answer quality and how we assessed and treated outliers. Data is analyzed according to Field et al. (2012) and Howell (2012).

5.3.5.5.1 Choices made while analyzing the use-case knowledge search

First, to separate good and sufficient answer quality from poor answer quality, we compared (n=77) answers with the official 12-point checklist that describes the process for onboarding new employees at the partner company. We coded 1 for answers that matched all twelve points with the official checklist, and we coded 0 for answers that matched fewer than twelve points. We made the choice to remove (n=6) cases coded with 0.

		n	%	mean	sd
Gender	Female	28	40.6	-	-
	Male	41	59.4	-	-
Age (years)		-	-	31.7	7.4
ESN experience	Low	35	50.7	-	-
	High	34	49.3	-	-
Business role	Finance	3	4.4	-	-
	Sales	3	4.4	-	-
	Consulting	9	13.0	-	-
	HR	8	11.5	-	-
	Management	5	7.3	-	-
	Operations	5	7.3	-	-
	Support	21	30.4	-	-
	Engineering	15	21.7	-	-
Organizational affiliation (years)		-	-	11.2	10.2
Projects (#)		-	-	6.0	7.0
Total		69	-	-	-

Notes: SD = Standard deviation.

Table 21 Main characteristics: Subsample knowledge search
Source: Own illustration

Second, we determined (n=2) strong outliers that differed in terms of duration from the standard deviation of the sample by more than three times. As knowledge search represents a standard search task with a low up to a medium level of difficulty and as the relative sample size of (n=69) was rated as rather high, we made the choice to remove the cases.

Third, we made the choice to use Wilcoxon's rank-sum test as data does not fulfill all assumptions of parametric data, as it is not normally distributed with an $n < 25$.

We present the main characteristics of the subset in Table 21.

5.3.5.5.2 Choices made while analyzing the use-case expert search

First, to separate scores with good and sufficient answer quality from scores with poor answer quality within the sample (n=42), the one up to three identified experts were evaluated by project sponsors of the partner company from a human resource and a bid management perspective. Thereby the project sponsors compared suggested candidates with the search profile of use case *expert search*. We coded: good fit = 3, sufficient fit = 2 and poor fit = 1. Subsequently, the average fit of the identified experts was determined by summing up the codes and dividing them by the number of identified experts. Cases were rounded up at an x.5 level. We made the choice to remove (n=10) cases coded < 2. We present the main characteristics of the subset in Table 22.

		n	%	Mean	SD
Gender	Female	12	37.5	-	-
	Male	20	62.5	-	-
Age (years)		-	-	32.4	7.0
ESN experience	Low	15	46.9	-	-
	High	17	53.1	-	-
Business role	Finance	1	3.1	-	-
	Sales	2	6.3	-	-
	Consulting	5	15.5	-	-
	HR	3	9.4	-	-
	Management	2	6.3	-	-
	Operations	3	9.4	-	-
	Support	8	25.0	-	-
	Engineering	8	25.0	-	-
Organizational affiliation (years)		-	-	10.5	9.3
Projects (#)		-	-	5.4	4.6
Total		32	-	-	-

Notes: SD = Standard deviation.

Table 22 Main characteristics: Subsample expert search

Source: Own illustration

Second, we determined (n=2) light outliers that differed from the standard deviation of the sample by two times. As expert search represents a sophisticated search task with a high up to a very high level of difficulty and as the sample size of (n=32) was rated as rather small, we made the choice to keep the cases.

Third, we chose to use Wilcoxon's rank-sum test as data does not fulfill all assumptions of parametric data, as the variance homogeneity is violated.

5.3.5.5.3 Understanding the sample

We contacted n=400 knowledge workers at ITC. As shown in Table 20, a total of n=156 participants completed the pre-experimental survey. Of those n=156 participants, n=75 (48%) participated in the scenario knowledge search and n=42 (27%) participants subsequently participated in the scenario expert search. Finally, n=61 (39%) participants responded to the experiment's feedback survey.

We, next, present the details on participants' demographic characteristics. As shown in Table 23, our sample is heterogeneous and diverse, which allows us to draw conclusions about the population of ESN users in multinational industrial companies and validate our results as being generalizable.

		n	%	mean	sd
Gender	Female	59	37.8	-	-
	Male	97	62.2	-	-
Age (years)		-	-	33.8	7.4
ESN experience	Low	91	58.3	-	-
	High	65	41.7	-	-
Business role	Finance	8	5.2	-	-
	Sales	13	8.1	-	-
	Consulting	17	11.0	-	-
	HR	20	12.8	-	-
	Management	12	7.6	-	-
	Operations	15	9.9	-	-
	Support	40	25.6	-	-
	Engineering	31	19.8	-	-
Organizational affiliation (years)		-	-	11.7	9.8
Projects (#)		-	-	8.0	10.9
Total		156	-	-	-

Notes: SD = Standard deviation.

Table 23 Characteristics of the study population

Source: Own illustration

5.3.5.5.4 Assessment of the measurement model

The experimental design fulfills all validity-related criteria purposefully. To ensure the internal validity of the experiment, we randomize the sample and keep the disturbance variables constant throughout the experiment. We thereby ensure that all effects on the dependent variable *processing times* are unequivocally attributable to the impact of the independent variables *ESN experience* and *information landscape*. To ensure external validity, we designed the experiment as a pure field-experiment where participants perform the tasks in their natural and everyday work environment.

We, next, outline on the results of survey part three – the feedback survey – which strongly support and validate the experimental setup to be comprehensible and logical.

To test the validity of our experimental setup, we perform explorative analyses of the feedback provided by the participants. The correlations we present in Figure 21 indicate that the data got produced in a comprehensible and logical experimental setup.

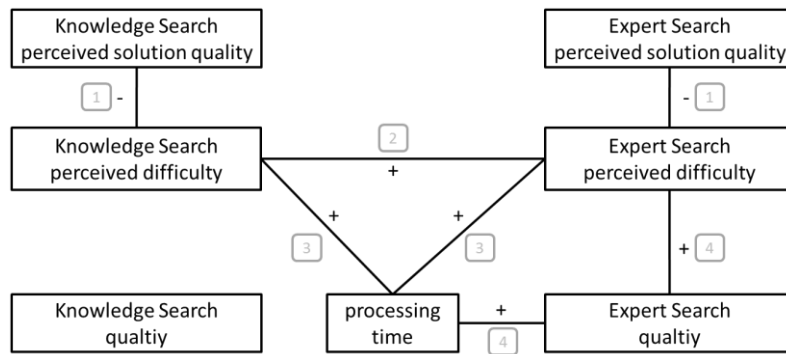


Figure 21 Correlation matrix on survey part three
Source: Own illustration

First, the observed scores of perceived solution quality significantly correlate negatively with the perceived difficulty in the use-cases knowledge search ($\tau = -.20, p < .05$) and expert search ($\tau = -.24, p < .05$). The lower the participants rated their solution quality, the higher they rated the difficulty of the task.

Second, the scores of perceived difficulty in the use-case knowledge search significantly correlate with those in the use-case expert search ($\tau = .21, p < .05$). As intended, participants rated the task knowledge search not as difficult as the task expert search (Figure 22). This supports the intended setup of the experiment to raise the difficulty of the tasks from easy (pre-experiment survey) through medium (task knowledge search) to difficult (expert search).

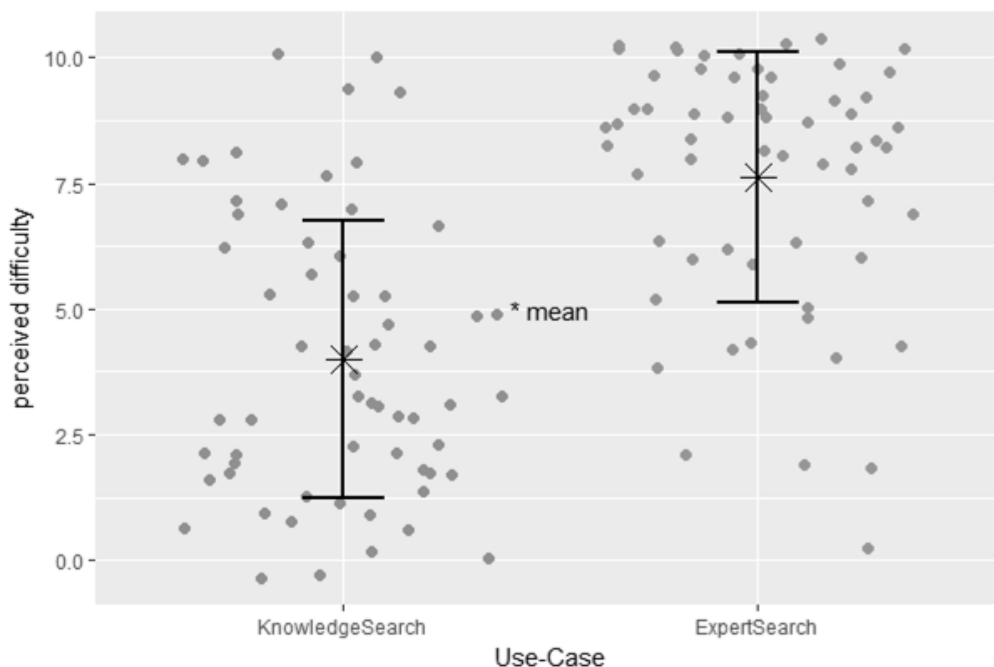


Figure 22 Perceived Difficulty per Use Case
Source: Own illustration

Third, the observed scores for perceived difficulty significantly correlate with the processing time, in both use-case knowledge search ($r_s = .50$, $p < .001$) and use-case expert search ($r_s = .34$, $p < .05$). The higher the difficulty was rated, the longer it took the participants to complete the task.

Fourth, the observed scores of perceived difficulty in the use-case expert search significantly correlate with the answer quality ($\tau = .38$, $p < .01$), and the processing time for expert search significantly correlates with the answer quality ($r_s = .31$, $p < .05$). This further indicates, that expert search is a complex task that needs to be performed thoroughly to achieve high quality outcome.

Together these results provide important insights that the data was produced in a comprehensible and logical experimental setup.

5.3.6 Results

We use Wilcoxon's rank-sum test, a non-parametric statistical procedure, for the data analysis. We choose R as the analytical software (Field et al., 2012) to test our hypotheses. We follow the guidelines as set down by Field et al. (2012) and Howell (2012) to present our results. We show the descriptive statistics values of the research model's components in Table 24.

	Knowledge search (n=69)				Expert Search (n=32)			
	CLASSIC		ESN		CLASSIC		ESN	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Task efficiency	8.24	5.32	6.95	4.85	14.57	10.80	8.24	4.84
ESN experience	1.52	0.57	1.36	0.87	1.57	0.79	1.44	0.92
ESN use	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00
Voluntariness	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00

Notes: *Task efficiency* is measured in processing time in minutes. *ESN experience* is measured using four-point Likert-type scales (0 = no experience, 1 = low experience, 2 = high experience, 3 = very high experience). *ESN use* is coded as 0 in the CLASSIC and 1 in the ESN setup. *Voluntariness* is coded with 1 throughout the whole experiment as participants' *ESN experience* evolved in a voluntary work environment. SD: Standard deviation.

Table 24 **Descriptive statistics**
Source: Own illustration

To ensure that the control variables do not need further investigation, we assessed the control variables' effects on task efficiency. The control variables used for this experiment, namely *gender*, *organizational affiliation (years)*, *age*, *work experience (number of projects/mandates)*, *experience in bid team staffing*, *hiring experience*, and *interconnectedness*, did not have any significant effects on the performance outcome variable. We thus see strong support that the chosen predictors within our research model explain the relationship between ESN use and individual value contribution.

We, next, present the descriptive statistics values of the control variables as well as a correlation matrix.

We conduct explorative and visual analyses of the characteristics of the study population and reveal remarkable correlations, which we present in Figure 23.

We investigate the correlations among the data of demographics and experiment scores according to their variable type and characteristics by performing Pearson's r , Kendall's τ , or Spearman's correlation coefficient r_s . We present the results in Table 25.

	1	2	3	4	5	6	7	8	9	10
1 Task efficiency (knowledge search)	1.00									
2 Task efficiency (expert search)	0.10	1.00								
3 ESN experience	-0.21*	-0.34 ^{ec}	1.00							
4 Interconnectedness	-0.24	-0.45 ^{ec}	0.26 ^{***}	1.00						
5 Gender	---	---	$\chi^2(3) = 9.36^{*f}$	---	1.00					
6 Age	0.05	0.11	-0.38 ^{***}	0.02	---	1.00				
7 Hiring experience	-0.04	-0.09	0.16 [*]	0.12	---	0.20 ^{**f}	1.00			
8 Experience in bid team staffing	0.02	-0.13	0.16 [*]	0.17 ^{†f}	---	0.03	0.30 ^{***†f}	1.00		
9 Organizational affiliation (years)	0.12	0.03	-0.22 ^{***†k}	0.17 ^{**†f}	---	0.68 ^{***}	0.18 ^{**†f}	-0.01	1.00	
10 Work experience (# projects)	0.12	-0.18	0.03	0.18 ^{**†f}	---	0.33 ^{***†k}	0.29 ^{**†f}	0.17 ^{†f}	0.41 ^{***}	1.00

Notes: We tested control variables amongst three different subsets, namely all participants (n=126), participants knowledge search (n=69) and expert search (n=32).
[†]: significant in full sample all participants; ^k: significant in subsample knowledge search; ^c: significant in subsample expert search; Values without [†], ^k or ^c are significant in all three subsets.

We tested the correlations among the data of demographics and experiment scores according to their variable type and characteristics by performing Pearson's r , Kendall's τ , Pearson's Chi-squared test, or Spearman's correlation coefficient r_s accordingly.

---: not significant correlation Pearson's Chi-squared test, *: p<.050, **: p>.010, ***: p>.001.

Table 25 Results of correlation analysis

Source: Own illustration

First, the participants' work experience (measured in amount of projects worked in) significantly correlates with participants' perceived experience in hiring new employees, $r_s = .35$, $p < .0001$. The participants' work experience (measured in amount of projects worked in) significantly correlates with participants' perceived experience in staffing bid teams, $r_s = .20$, $p < .05$. The participants' perceived experience in hiring new employees significantly correlates with participants' perceived experience in staffing bid teams, $r_s = .33$, $p < .0001$.

Second, the participants' organization affiliation significantly correlates with participants' work experience (measured in amount of projects worked in), $r = .41$, $p < .0001$. The participants' organization affiliation significantly correlates with participants' perceived experience in hiring new employees, $r_s = .23$, $p < .01$.

Third, the participants' perceived interconnectedness significantly correlates with participants' work experience (measured in amount of projects worked in), $r = .22$, $p < .01$. The participants' perceived interconnectedness significantly correlates with participants' perceived experience in staffing bid teams, $r_s = .22$, $p < .01$.

Fourth, the participants' perceived interconnectedness significantly correlates with participants' organization affiliation, $r_s = .22$, $p < .01$.

Fifth, the participants' age significantly correlates with participants' organization affiliation, $r_s = .80$, $p < .0001$.

Sixth, the organizational affiliation significantly correlates negatively with how well participants rated their ESN experience, $r_s = -.29$, $p < .001$. In other words, the longer participants work for the case company, the lower they rate their ESN experience.

Seventh, age significantly correlates negatively with how well participants rated their ESN experience, $r_s = -.44$, $p < .0001$. In other words, younger participants rated their ESN experience higher than older participants.

Eighth, the participants' perceived interconnectedness significantly correlates with how well participants rated their ESN experience, $r_s = .28$, $p < .001$. In other words, the more participants feel interconnected, the higher they perceive their ESN experience.

Ninth, the participants' processing time in the use-case knowledge search significantly correlates negatively with how well participants rated their ESN experience, $r_s = -.27$, $p < .05$. The participants' processing time in the use-case expert search significantly correlates negatively with how well participants rated their ESN experience, $r_s = -.40$, $p < .05$.

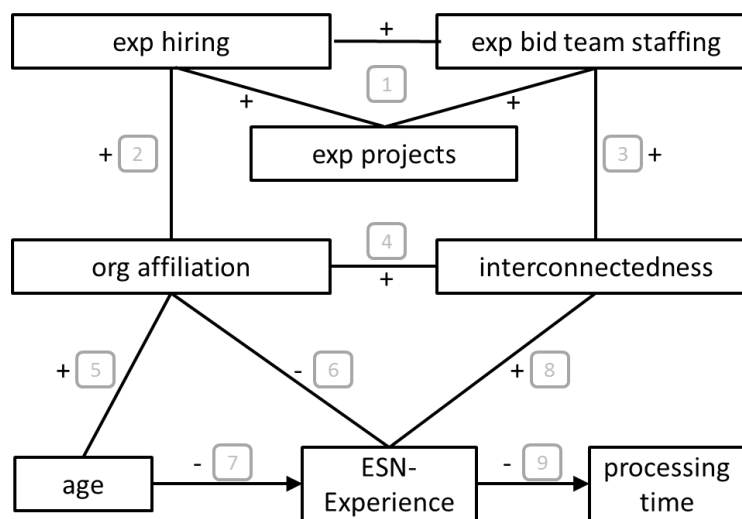


Figure 23 Correlation matrix of characteristics of study population

Source: Own illustration

Tenth, the observed scores of ESN experience differed significantly (pearson's chi-squared test (3, $n = 156$) = 9.3602, $p < .05$) from the scores expected to be equally distributed for male and female participants. In other words, male participants rated their ESN experience higher than female participants.

5.3.6.1 Results of main effect analysis

To evaluate the main effects of our model and to answer our hypotheses H1a and H1b, we next present the results of the data analysis.

We found that the processing times of ESN users (Mdn = 6.5, $n = 40$) do not differ significantly from those of CLASSIC users (Mdn = 8.0, $n = 29$) in the use-case knowledge search, $W = 667.5$, $p = 0.287$, $r = -.13$ independent of their level of ESN experience ($n = 69$). In line, we found processing times of ESN users (Mdn = 8.0, $n = 25$) to not differ significantly from those of CLASSIC users (Mdn = 10.0, $n = 7$) in the use-case expert search, $W = 117.5$, $p = 0.178$, $r = -.24$ independent of their ESN experience ($n = 32$).

Based on the results, we reject hypotheses H1a and H1b. As shown in Figure 24, ESN use does not have a direct significant effect on task efficiency.

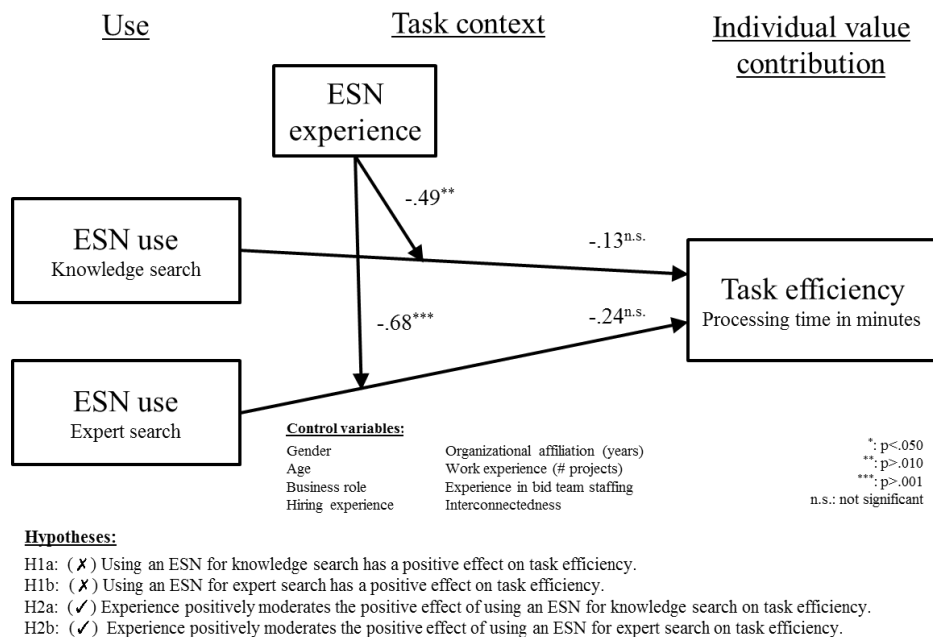


Figure 24 Results of testing the hypotheses

Source: Own illustration

5.3.6.2 Results of moderation analysis

To evaluate the moderation effects of our model and to answer our hypotheses H2a and H2b, we next present the results from the moderation effect analysis.

We found that processing times of experienced ESN users (Mdn = 3.0, n = 18) differ significantly from those of inexperienced ESN users (Mdn = 10.0, n = 22) in the use-case knowledge search, $W = 85$, $p = 0.002^{**}$, $r = -.49$ when using the information landscape ESN (n = 40). Accordingly, we found that the processing times of experienced ESN users (Mdn = 4.0, n = 12) differ significantly from those of inexperienced ESN users (Mdn = 11.0, n = 13) in the use-case expert search, $W = 15.5$, $p = 0.001^{***}$, $r = -.68$ when using the information landscape ESN (n = 25). In addition, we found that the processing times of experienced ESN users (Mdn = 6.0, n = 34) differ significantly from those of inexperienced ESN users (Mdn = 10.0, n = 35) in the use-case knowledge search, $W = 409.5$, $p = 0.025^*$, $r = -.27$ independent of the information landscape used (n = 69). In line, the processing times of experienced ESN users (Mdn = 5.0, n = 17) differ significantly from those of inexperienced ESN users (Mdn = 10.0, n = 15) in the use-case expert search, $W = 68$, $p = 0.026^*$, $r = -.40$ independent of the information landscape used (n = 32).

Taken together, ESN experience changes the nature of the relationship between ESN usage and processing time as a pure and quasi moderator. Thus, under the premise of holding ESN experience, knowledge workers significantly increase their individual value contribution when performing knowledge intensive tasks in an ESN instead of a CLASSIC information landscape.

Therefore, as shown in Figure 24, hypotheses H2a and H2b are supported by the data. We show the interaction effect in Figure 25 and provide the underlying test results from analysis below.

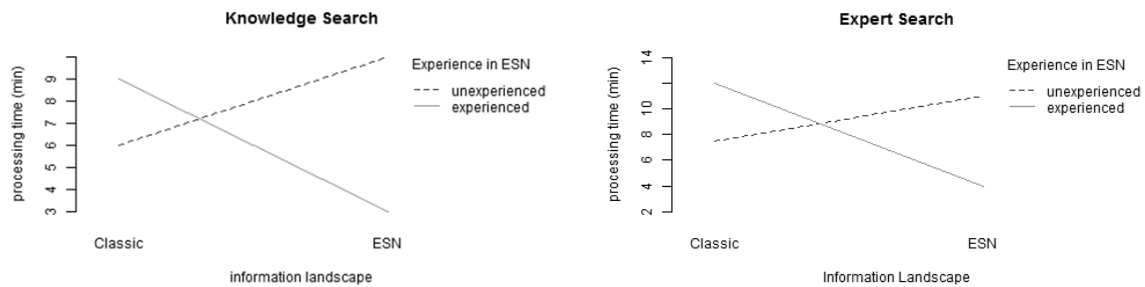


Figure 25 Interaction diagrams: ESN experience changes the relationship between ESN use and task efficiency
Source: Own illustration

Processing times of experienced ESN users (Mdn = 3.0, $n = 18$) differed significantly from those of inexperienced ESN users (Mdn = 10.0, $n = 22$) in the use-case knowledge search, $W = 85$, $p = 0.002^{**}$, $r = -.49$ when using the information landscape ESN ($n = 40$).

Furthermore, processing times of experienced ESN users (Mdn = 9.0, $n = 16$) did not differ significantly from those of inexperienced ESN users (Mdn = 6.0, $n = 13$) in the use-case knowledge search, $W = 101.5$, $p = 0.930$, $r = -.02$ when using the information landscape CLASSIC ($n = 29$).

Processing times of ESN users (Mdn = 3.0, $n = 18$) differed significantly from those of CLASSIC users (Mdn = 9.0, $n = 16$) in the use-case knowledge search, $W = 209$, $p = 0.025^*$, $r = -.39$ within the sample of experienced ESN users ($n = 34$).

Processing times of ESN users (Mdn = 10.0, $n = 22$) did not differ significantly from those of CLASSIC users (Mdn = 6.0, $n = 13$) in the use-case knowledge search, $W = 132.5$, $p = 0.731$, $r = -.06$ within the sample of inexperienced ESN users ($n = 35$).

Processing times of experienced ESN users (Mdn = 4.0, $n = 12$) differed significantly from those of inexperienced ESN users (Mdn = 11.0, $n = 13$) in the use-case expert search, $W = 15.5$, $p = 0.001^{***}$, $r = -.68$ when using the information landscape ESN ($n = 25$).

Furthermore, processing times of experienced ESN users (Mdn = 12.0, $n = 5$) did not differ significantly from those of inexperienced ESN users (Mdn = 7.5, $n = 2$) in the use-case expert search, $W = 8$, $p = 0.329$, $r = -.37$ when using the information landscape CLASSIC ($n = 7$).

Processing times of ESN users (Mdn = 4.0, $n = 12$) differed significantly from those of CLASSIC users (Mdn = 12.0, $n = 5$) in the use-case expert search, $W = 55$, $p = 0.009^{**}$, $r = -.63$ within the sample of experienced ESN users ($n = 17$).

Processing times of ESN users (Mdn = 11.0, n = 13) did not differ significantly from those of CLASSIC users (Mdn = 7.5, n = 2) in the use-case expert search, $W = 5$, $p = 0.201$, $r = -.33$ within the sample of inexperienced ESN users (n = 15).

5.3.6.3 Unexpected results

We next present two additional unexpected but remarkable results. First, we identified a significantly higher continuation of participation when participants were assigned to perform tasks in the ESN. Second, we found that *ESN experience* devalues *interconnectedness* as predictor for task efficiency.

As depicted by Figure 26 and verified through the correlation test results in Table 25, we identified a conflict area that comprises (1) *age* and *organizational affiliation* to be significantly related to *ESN experience* negatively, (2) *interconnectedness* to be significantly related to *ESN experience* positively while (3) *organizational affiliation* is significantly related to *interconnectedness* positively.

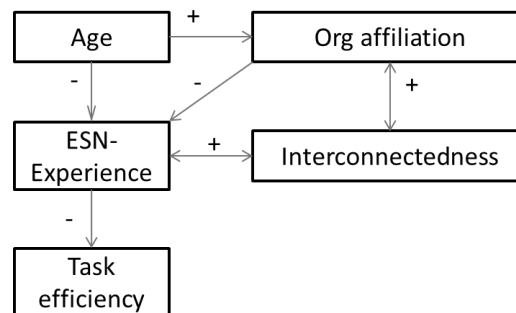


Figure 26 Extract on correlations revealing an age-dependent organizational conflict area

Source: Own illustration

These findings may help us to understand drivers and barriers for ESN use. As shown in Figure 26, visual analysis suggests that younger knowledge workers deliberately or unwittingly build up *ESN experience* to benefit from the capabilities of ESNs (significantly better task efficiency) and thereby devalue *interconnectedness*, which common sense indicates to be the usual and previous predictor for individual performance in knowledge driven organizations. *Interconnectedness* is usually built up over years within an organization and, as data supports, is astonishingly outperformed as a predictor for *task efficiency* by *ESN experience*.

It can therefore be assumed that digital natives use ESNs to build *interconnectedness* without serving an organization for many years. This observation suggests an exciting compensation or bypass effect of *ESN experience* on *organizational affiliation* to build *interconnectedness*. It can therefore be assumed that (1) *interconnectedness* is an important asset of employees within organizations (2), and, as data has revealed, digital native employees hold a significant higher *ESN experience* than their digital immigrant co-workers (see Table 25) and (3) that *organizational affiliation* has been a powerful precondition to build *interconnectedness* for decades. It can therefore be assumed that digital immigrants might feel uncomfortable with an

upcoming generation of digital natives that seems not to have to walk the stony path of building *interconnectedness* through organizational affiliation. This smoldering conflict could be a possible explanation for insufficient openness and attitude when collaborating on new social technologies. Usually, digital immigrants hold powerful positions in organizations. Digital natives might therefore tend to suppress their social communication style when it does not pay off in the relationship with their superiors even though it derogates—as shown by the data—individual and business value contribution. This aspect highlights the relevance of cultural values like openness and a knowledge-sharing attitude within organizations to unleash the value contribution of ESNs.

5.3.7 Discussion

We investigated two hypotheses in this study. First, we hypothesized that using an ESN for a knowledge search and expert search has a positive effect on task efficiency. Second, we hypothesized that ESN experience moderates the positive effect of using an ESN for a knowledge search and expert search on task efficiency.

Contrary to our expectations, we found that ESN use does not have a direct significant positive effect on task efficiency. However, we found that *ESN experience* unleashes a significant positive effect of ESN use on *task efficiency*. This simple but powerful constellation explains: ESNs are not a natural! More specifically, ESNs do not create value until employees have accrued a high or very high level of ESN experience.

One reason for this relationship might be the natural link between practice and experience. Common sense suggests that one has to understand and practice a new technique or a new technology to become proficient. This brings the question of “*how do employees gain ESN experience?*” to the fore. Actually, we would have expected a sample with a higher average in ESN experience for several reasons. First, to enable employees to build up their *ESN experience*, the introduction of the ESN at ITC was flanked by large-scale interventions, namely strategic change management, user and awareness trainings, as well as incentive and bonus systems. Second, the increasing use of social software in private environments is discussed to facilitate social network use also in enterprises (boyd & Ellison, 2007). Another powerful indicator for shrinking barriers when implementing ESNs is derived from the various positive effects of ESN use identified in the literature (Bughin, 2008; DiMicco et al., 2008; Fulk & Yuan, 2013; H. Hasan & Pfaff, 2006; Jackson et al., 2007; Mansour et al., 2011; Thom-Santelli et al., 2008; Treem & Leonardi, 2013; Zhang et al., 2010). However, our data reveals that even though the ESN was introduced approximately 36 months ago, 58% (n=156) of our sample still has little to nearly no ESN experience.

Why is *ESN experience*, the precondition to benefitting from ESN use, missing on such a large scale? Possible reasons for this could be insufficient initial and continuous training or a lack of interest or time to attend training. Another explanation could be that constructs of existing technology acceptance theories might not have been addressed accurately during the strategic change management interventions. Here, the so far neglected verification of the value contribution of ESN use in technology acceptance models could explain non-use of ESNs (see

Table 17). For employees, a missing fact-based “What’s in it for me?” appears to be a comprehensible and powerful barrier that prevents employees from gaining ESN experience.

This result is fascinating because the data shows that 58% of employees are inexperienced ESN users (which implies that this group did not perceive a meaningful value contribution after three years) and face a dilemma: on the one hand, initial ESN use impairs individual value contribution (see interaction diagrams in Figure 25) whereas 42% of employees who were in the group of experienced ESN users (which implies that this group did perceive a meaningful value contribution) report that their individual value contribution increased through ESN use. The existence of two opposing groups initiates group dynamic processes, and it is quite understandable that individuals who do not perceive a value contribution search for social stability and recognition within the group of inexperienced ESN users (the majority of ESN users). First, to justify their decision of non-use, inexperienced individuals are likely to support and disseminate arguments that criticize or reject ESN use. This negative word-of-mouth effect could be one important factor that prevents employees from increasing their *ESN experience* (Deng & Ravichandran, 2017; Kuegler et al., 2015). Second, inexperienced ESN users do not utilize ESN (efficiently or at all) and continue working in their usual and previous work routines and business tools (*status quo bias*, Samuelson & Zeckhauser, 1988). This could explain dissatisfaction and efficiency loss in organizations that actually intend to reach a critical mass and to increase its efficiency (Mann et al., 2012). This efficiency loss seems to have its origin in the derogated collaboration of two types of employees: namely experienced and inexperienced users, because they have opposing attitudes and technological preferences. As shown in Figure 26, *age* also seems to reinforce this tension.

With this novel approach, we, for the first time, verify the existence of the value contribution of ESN use. Thereby, we provide a comprehensible approach to explain the described dilemma of non-use of ESNs. In essence, we show that building ESN experience is worth the effort as it is the precondition for the employee to significantly benefit from ESN use. Our argumentation is strongly in line with the findings of Kim and Kankanhalli (2009), who found that the perceived value contribution of using an IS reduces user resistance. This lends strong support to our findings that verifying and quantifying value contribution of ESN use reduces user resistance. Reduced user resistance increases ESN use. ESN use—as shown in the data—allows increasing individual and business value contribution.

5.3.7.1 Theoretical implications

Unlike Kuegler et al. (2015), our results do not confirm a direct significant and positive relationship between ESN use and individual value contribution (employee performance). This difference might be explained by the differing methods used. While Kuegler et al. (2015) uses a survey to determine employee performance on a Likert scale, we conduct a field experiment that measures actual task efficiency. In addition, although Kuegler et al. (2015) do not explicitly take *ESN experience* into account to explain employee performance, our results indicate that *ESN experience* could also be the decisive moderating effect in their study.

Comparison of the findings with those of existing technology acceptance theory (Venkatesh et al., 2003; Venkatesh & Bala, 2008) confirms and extends *ESN experience* to not only moderate

the *intention to use* an ESN but also to moderate the relationship between ESN use and value contribution. This means that a user's *intention to use* seems to be in turn reinforced by constructs of individual value contribution (e.g. see *result demonstrability* (Rogers, 2003), see Table 6 for an overview). Specifically, our results increase the relevance of constructs that represent objective figures of advantageousness in existing technology acceptance theory (Kim & Kankanhalli, 2009; Moore & Benbasat, 1991; Venkatesh, 2000; Venkatesh & Bala, 2008; Venkatesh & Davis, 2000).

With our findings, we support and extend the results of Treem and Leonardi (2013), who differentiated the use and advantageousness of social media in organizations from existing forms of computer-mediated communication. Unlike Treem and Leonardi (2013), who compared affordances to outline the advantageousness of ESNs, we operationalize their approach by conducting a field experiment.

There are various studies that identify benefits of ESN use (Bughin, 2008; DiMicco et al., 2008; Fulk & Yuan, 2013; H. Hasan & Pfaff, 2006; Jackson et al., 2007; Mansour et al., 2011; Thom-Santelli et al., 2008; Treem & Leonardi, 2013; Zhang et al., 2010). Overall, our results support those studies and extend them by increasing understanding regarding how and why these benefits exist. We therefore respond to the request of Williams et al. (2013), to enhance research and move “from identifying benefits towards ways of quantifying benefits” of ESN.

This study operationalizes and confirms research of Herzog and Richter (2016), who suggest that use cases as a means provide a suitable and purposeful approach for quantifying the value contribution of ESN use and for outlining the advantageousness of ESNs compared to prevalent IS.

Our results furthermore contribute to theory by increasing the understanding on the so far unexplained process of how to create and how to verify internal and competitive value from ESN use as requested by Schryen (2013).

5.3.7.2 Managerial implications

Our study provides various managerial implications for organizations dealing with the implementation, development or valuation of ESNs. With the starting point in the “*productivity paradox*,” there are various reports that suggest that ESNs struggle to achieve desired performance impacts (Brynjolfsson, 1993; Mann et al., 2012). Our results provide a fact-based approach that verifies the value contribution of ESNs and the advantageousness of ESNs compared to prevalent information landscapes. Both results (a significant positive relationship between ESN use and individual value contribution moderated by ESN experience) and the design of the experimental setup provide powerful assets to the managerial toolset of organizational development and change management.

The results of our study show that employees (inexperienced ESN users) seem to take a rational decision when using prevalent information landscapes instead of ESNs. As depicted in Figure 20, we argue that on the one hand, inexperienced users perceive a performance lead compared to experienced ESN users in prevalent information landscapes (the baseline), whereas on the other hand, their task efficiency is impaired when initially using ESNs. This shows that ESN

value contribution is hidden behind a blind spot. Possible reasons could be a missing trust in the promises about ESN benefits made by management or the missing integration of ESNs in the business processes of the organization.

ESN use demonstrably leads to individual value contribution. With this result, managers receive strong arguments and objective facts that help them to convince ESN users to sustainably use ESN. This supports reaching and stabilizing a critical mass of ESN users and anchoring ESN use in the organizational day-to-day business. The verified moderating effect of *ESN experience* encourages managers to focus on interventions and training offerings that help employees to build *ESN experience*. Additionally, our results suggest that the group dynamics between and within the groups of *experienced* and *inexperienced users* should be addressed thoroughly. Another important managerial implementation is that the outcome variable (task efficiency) can easily be converted into currency and managers should receive a metric that helps to outline the economic impact of ESN use within their organization and justify ESN investment decisions. Finally, the simple but powerful experimental setup allows organizations to repeat the experiment within their organization and to thereby derive further organizational specific findings.

5.3.7.3 Limitations and future research

Subsequently, we discuss possible threats to the validity of the research design (composed of a single case study with $n=156$) to understand the value of the presented results. First, although common sense indicates that employees in the IT domain would be rather open to social software, the sample appears reasonable for representing an industry independent organizational setup. This leads to the conclusion that results are not deviated by potential specifics of an IT company. In contrast to prior research that focuses on single business units (Leonardi, 2014), the aim of the study involves investigating ESN users on a general company level, a future study with a sample composed of more companies could help in strengthening the validity of the presented results. Second, we found that the specifics and functionalities of the ESN at the case company correspond to the definition of ESN in current literature. This leads to the conclusion that results are not deviated by the specifics of the ESN design at ITC. Third, to bundle non-ESN tools of an industry independent organization, we created the construct of a CLASIC IT environment which might be seen as too unspecific. We find this approach rather beneficial as it allows us to include the “preferred non-ESN source of information” of a participant to accomplish a knowledge and expert search in a simple and powerful way. With this approach, we set focus on the individual and organizational value contribution instead of specific tools (e.g. ESN vs. Intranet). Thoroughly constructed, this construct meaningfully represents standard communication tools of industry-independent organizations.

5.3.8 Conclusion

This study investigates the relationship between ESN use and the value contribution of 156 employees of a multinational IT service company. By conducting a use-case based field experiment, we quantify task efficiency for *knowledge search* and *expert search* (tasks, typically performed by knowledge workers) in two information landscapes, namely ESN and

CLASSIC. Our results provide strong evidence that *ESN use* does influence employees' *task efficiency*. Specifically, we found that *ESN experience* moderates the relationship between *ESN use* and task efficiency. Our work reveals that ESNs are not a natural. Furthermore, our findings validate that use-case-based approaches (tasks that business processes consist of) are suitable for quantifying the value contribution of ESNs. This study thus contributes to the IS literature in general by increasing the understanding of the use-performance relationship, and the ESN literature by providing valuable explanations on ESN use behavior.

6 The role of communicational behavior of executives in the age of ESNs

6.1 The study in a nutshell

Due to the increasing spread of smileys as an integral part of company internal e-mails, the purpose of this study is to examine whether and how the use of smileys affects distinctive characteristics of leaders in companies. We conducted a survey among 55 subjects with distinctive work experience to investigate on how smiley use affects competence, warmth and power, status and authority related perceived traits of executives. In addition, we present current studies to discuss the definitions, causes, challenges and effects of smiley usage. Overall, results show that the use of smileys in corporate communication affects the perceived characteristics of an executive predominantly adverse. Furthermore, the number of smileys used and age were found to strengthen or mitigate these effects.

6.2 Introduction

The rise of social network communication with its inherent change in language (e.g. use of smileys, abbreviations and acronyms) as well as increased visibility and extended transparency of information (Treem & Leonardi, 2013) requires a thoughtful reflection of current communicational behavior of executives. Social media has changed the way individuals interact in private environment but also as professionals. Hence, executives are expected to perform a competent and effective social communication in professional environments. Correspondingly, new channels like enterprise social networks, instant messengers, blogs and wikis are induced into corporate IS landscapes and challenge the familiar communicational behavior of executives. Here, the most concise element of social communication is smiley usage, respectively the use of emoticons. Literally, smileys are graphically represented emoticons, but typically both terms are used synonymously in practice. With the phenomenon of digital socialization, smileys also conquered email, the most common communication channel, and force executives to deal with new requirements and expectations even in classic work environments without e.g. enterprise social networks. Today, numerous emails and ESN posts are exchanged between executives and employees in multinational companies today, with and without smileys.

Another aspect why leaders are expected to be aware of the effect of smiley usage and usage frequency in communication with employees, is the potential compensation of missing non-verbal indicators in written communication. Missing non-verbal indicators like e.g. gesture, facial expression or voice intonation are an important disadvantage of computer mediated communication compared to face-to-face communication (Walther & Tidwell, 1995). Here, smileys can serve as a valuable resource to compensate this disadvantage (Krohn, 2004; Lo, 2008). Hence, the proper use of smileys in a work environment offers a lever for efficient communication but also comprises risks and danger in terms of how leaders are perceived as a person.

This is specifically important, as an executive's reputation represents a key asset of an organization. An executive's reputation outlines the level of confidence in the executive as well as how accepted an executive is within and outside the organization. Reputation puts weight to

opinions and decisions. We state that reputation is the consequence of how the interpersonal characteristics of an executive are perceived by his or her stakeholders. In the context of reputation, the perceived interpersonal characteristics sum up to an overall impression on three things: how well the executive is capable to reach his or her goals and the goals of the organization, how the executive fits with the moral concept of a stakeholder and how the executive is perceived to positively affect the personal future of a stakeholder. Overall, how the interpersonal characteristics of an executive are perceived is crucial for an executive. Thus, executives strive to maintain and increase a positive perception of his or her characteristics by his or her stakeholder.

Currently, there is only little research that addresses the impact of smileys in emails on perceived interpersonal characteristics in a professional environment. Existing studies of Ellensburg (2012) focus on scenarios, in which subjects assess an email answer of a potential employer from the perspective of an applicant. The question, if and how the usage of smileys affects the perceived professionalism, authority, sympathy, competence and status of an executive, as well as the confidence in an executive environment is not investigated adequately yet. The focus of this study is not on the influence of smileys on the interpretation of messages; it clearly focuses on the interpretation of the leader as a person that is sending an email to one of his employees.

The addressed research question is: Does the usage of smileys in internal emails affect the perceived characteristics of executives? To elaborate on this topic, we hypothesize the following: Hypothesis 1 (H1): The usage of smileys in emails affects the perceived professionalism, authority, sympathy, competence and status of an executive, as well as the confidence in an executive negatively. Hypothesis 2 (H2): The usage of smileys in emails affects the perceived sympathy of an executive positively. Hypothesis 3 (H3): The perception of characteristics of an executive that uses smileys in emails differs dependent upon the frequency of smiley usage. Hypothesis 4 (H4): The perception of characteristics of an executive that uses smileys in emails differs dependent upon the age of the recipient.

By using fictive but realistic business scenarios, 55 subjects were asked to assess executive's characteristics based on a realistic work-related email communication, which was manipulated by the incorporation of either no smiley, one smiley or three smileys.

The remainder of this study is structured as follows. We introduce the theoretical background of this study in section 6.3.1 and section 6.3.2. Subsequently, we describe the research design in section 6.3.3. We disclose the main findings of our work in section 6.3.4. Finally, we discuss the main findings in section 6.3.5 before we close with a conclusion in section 6.3.6.

6.3 Smiley usage - effects on perceived traits of executives

6.3.1 Theoretical background on use of smileys in a professional environment

The "social information processing" (SIP) model provides an important theoretical cornerstone for this study (Walther, 1992; Walther & Tidwell, 1995). The SIP theory states that the exchange of information is slower in "computer mediated communication" (CMC) than in face

to face interaction. It furthermore assumes that people who interact with each other via CMC, actively develop social relationships, regardless of the actual interaction reason (Walther & D'Addario, 2001). In addition, the exchanged textual messages are used by users, who do not know each other, as the basis for forming an opinion with respect to the interaction partner (Walther & D'Addario, 2001). However, the most important aspect of the SIP theory is that users adapt to the medium used to communicate and find ways to overcome the limitations of the technology, such as missing facial expressions (Walther & D'Addario, 2001). The SIP theory was applied to the use of emoticons and defines them as a specific type of adjustments to the restrictions in CMC in terms of non-verbal indications (Walther & D'Addario, 2001).

However, studies in which the SIP model is applied to explore the effects of smileys on interpersonal perception in "computer mediated business communication" (CMBC) are rare. According to Ellensburg (2012) the focus in existing literature in CMC is on message interpretation instead of 'person' interpretation, or does not concern CMBC. How exactly smileys change the perceived characteristics of persons who use them has not yet been sufficiently explored. Recent studies that address this issue are introduced subsequently in section 6.3.2.

Much of the communication in multinational companies is exchanged between executives and/or employees who do not or only poorly know each other. The "uncertainty reduction theory" of C. R. Berger and Calabrese (1974) assumes that people communicate in order to reduce their uncertainty about the communication behavior of others. Byron and Baldrige (2007) conclude that the recipient of organizational communication investigates for clues such as smileys, or the senders writing style, in order to form an opinion about the transmitter.

This statement describes an important challenge for executives with the massive proliferation of email as a communication channel. There is a risk that individual misconceptions and uncertainties by smileys in work-related emails arise (Byron & Baldrige, 2007). The usage of smileys creates a broader room for interpretation, which can hinder the communication between the management and employees. Although the use of smileys can potentially help to communicate the emotion behind a message more clearly, there is also the possibility to degrade the perception of the sender of an e-mail with smileys due to their low level of acceptance in the business world (Byron & Baldrige, 2007).

The acceptance of smiley usage in the workplace depends among others strongly on the age of a person. According to Krohn (2004) people of different ages respond differently to the use of smileys. Therefore, it makes sense in an e-mail to make the use and frequency of smileys dependent on the age of the recipient. This flexible approach to business communication is called "Generational Recipient Determinism", short GRD (Krohn, 2004). The assertion of Brignall and van Valey (2005) that the management positions in companies are still largely occupied by people from older generations, gives the GRD approach additional weight. Critically, however, we later on refer to the general assumption of the GRD approach, according to whom people born after 1964 completely accept the use of smileys in CMBC. Munter, Rogers, and Rymer (2003) warn that smileys can weaken the credibility of a person in a professional environment. Here, to achieve a high level of e.g. perceived professionalism, it is

recommended to dispense with the use of smileys. Other research, however, have found a positive effect on the perceived sympathy of the transmitter when using smileys in CMBC (Byron & Baldrige, 2007; Yoo, 2007).

Overall, recent research in CMBC disagrees about the use of smileys in a business environment. Relevant work in this field points out that still a deeper understanding of the actual impact and perception of smileys must be built in CMBC (Byron & Baldrige, 2007; Ellensburg, 2012; Skovholt, Grønning, & Kankaanranta, 2014).

6.3.2 Current state of research and hypothesis development

6.3.2.1 Smileys as contextual markers

To investigate the effects of smiley use, Skovholt et al. (2014) analyzed the internal e-mail traffic from three companies of different sizes. A basic assumption of their work was, that the primary function of smileys is not the transmission of emotions in an authentic working field as originally defined in existing literature for CMC (Derks, Fischer, & Bos, 2008). Here, smileys are introduced to aid the interpretation of messages correctly. Thus, smileys are contextualization cues, which serve to organize interpersonal relations in written interaction (Skovholt et al., 2014). With their results Skovholt et al. (2014) assigned three specific communication functions in CMBC to smileys:

- Following a signature, smileys serve as indicator for a positive attitude of the e-mail sender to the recipient or provide the facial expressions of the sender.
- Smileys are used to highlight statements that are meant as a joke or irony in a suitable humorous context.
- Smileys enhance the effect of messages that include thanks, greetings, wishes, reviews, promises or concessions and "soften" the effect of inquiries, corrections, rejections and complaints in terms of urgency or seriousness.

The results of Skovholt et al. (2014) largely correspond with those from Dresner and Herring (2010) identified communication functions of smileys in CMC:

- Emotion: The smiley directly maps onto a facial expression (e.g., happy or sad)
- Non-emotional meaning: The smiley conventionally maps onto a facial expression (e.g., a wink as indicating joking intent)
- Illocutionary indicator: The smiley does not conventionally map onto a facial expression (e.g., a smile as downgrading a complaint to a simple assertion)

An interesting side aspect of the study of Skovholt et al. (2014) was the number of smileys used in relation to the size of the companies that have been analyzed. In 611 examined internal emails from a Finnish company with almost 44,000 employees in total, only two smileys were used, representing approximately 0.003% of all emails sent. The second company consisted of 11 members of a spatially distributed work group. There was a total of 88 smileys in 491 internal emails of the members sent (17.9%). Here, the SIP model could be a comprehensible explanation (Walther, 1992, 1994) as fewer workers (especially spatially distributed work

groups) have more contact via IS with each other and participate faster in the creation of social relations over IS. Accordingly, the results indicate that company size and frequency of smileys used in internal company emails are inversely proportional related to each other. However, neither the results nor the assumptions are validated nor representative and the findings only build on a small empirical sample. However, we found it reasonable to take the idea behind the study of Skovholt et al. (2014) as a thought experiment for the study.

6.3.2.2 Effects of smileys on interpersonal perception

An early study that analyzed the impact of smileys in CMBC, was carried out by Yoo (2007). Based on an e-mail message, the participants (N = 457), which were mostly students and workers, had to evaluate perceived characteristics of their future employer (Yoo, 2007). In the e-mail, either no, two or four smileys were used. Smiley use was found to influence the perceived sympathy of the transmitter positively. Interestingly, when smileys were used too excessively, the perceived sympathy towards the transmitter drops sharply (Yoo, 2007). In addition, the perceived credibility of leadership was not affected by the use of smileys (Yoo, 2007).

A study, conducted by Ellensburg (2012), examined the effects of smiley use on the interpersonal perception in CMBC:

It was analyzed whether and how the professional status of a person who uses smileys in emails, influences perceived characteristics. In the fictional scenario of the study, 178 participants (mostly students and workers, age: 18-39 years) received six different emails from prospective employers who responded to a job application and are interested in more information on the applicant's resume. The number of smileys used in the e-mail varied between low (0 smileys), medium (1 Smiley) and strong (2-3 smileys) use. To integrate the professional status as an affecting factor, each of the three versions was signed by either one trainee (lower occupational status) or a CEO (high occupational status). The participants were asked to evaluate various perceived characteristics of the prospective employer using a questionnaire. The measured characteristics were the perceived authority, competence, sympathy, status and morale of the employer.

As a result, the use of smileys and the profession of the email sender affected interpersonal perception in CMBC. Specifically the effect of smileys depends on the professional status of the employer. The use of smileys leads to weaker perceived authority, competence, status and morality of the employer, but does not increase its sympathy. The results also outlined an important relationship between the number of used smileys and their effect on the e-mail recipient. The more smileys an executive used, the more his/her perceived authority, competence and status decreases. Neither the number of smileys nor the professional status of the e-mail sender affected the perceived sympathy. Furthermore, the age of the participants did not affect the perception of smileys. In contrast to the assertion of Krohn (2004) people perceived, regardless of their age, smileys as unprofessional and inappropriate in CMBC.

The study of Ellensburg (2012) provides the first scientific results which targeted the effects of smileys in emails on interpersonal perceived characteristics in a professional environment.

Unlike Skovholt et al. (2014) the focus is not on the influence of smileys on the interpretation of messages, but on the interpretation of the executive behind the content. The findings of Ellensburg (2012) confirm the warnings to use smileys in CMBC of Munter et al. (2003), as they have largely negative influences on interpersonal perception. Thus, smileys influence the perceived characteristics of human beings. Consequently, they change the interpersonal perception of a communication partner in CMBC, whereby they can be referred to as components of social information (Ellensburg, 2012). Overall we see, the implications of the “emotions as social information (EASI) model” of van Kleef (2009) and the SIP model of Walther and Tidwell (1995) can be applied to CMC respectively CMBC (Ellensburg, 2012).

6.3.2.3 Hypothesis development

In a summary, the impact of smiley usage on the interpretation of messages (Skovholt et al., 2014) and on the evaluation of perceived characteristics (authority, competence, sympathy, status and morale) of a potential future co-worker or employer (Ellensburg, 2012; Yoo, 2007) is integral part of previous research. However, the effect of smiley usage on the perceived characteristics of executives as a person has hardly been investigated empirically. In addition, previous studies present differing results. While the study of Yoo (2007) did not reveal a negative effect of smiley usage on the perceived credibility of leadership, Ellensburg (2012) found smiley usage to negatively affect perceived leadership related traits, such as competency. Building on existing research of (Ellensburg, 2012), we analyze how competence, sympathy, as well as power, status and authority related perceived traits of an executive are affected by smiley usage.

Hypothesis 1: As smiley usage is discussed to negatively affect competence, as well as power, status and authority related perceived traits of the sender (Byron & Baldrige, 2007; Ellensburg, 2012; Munter et al., 2003), we hypothesize : The usage of smileys in emails negatively affects competence, as well as power, status and authority related perceived traits of an executive.

Hypothesis 2: Theory outlined positive effects on the perceived sympathy of the transmitter when using smileys (Byron & Baldrige, 2007; Yoo, 2007). Therefore, we hypothesize: The usage of smileys in emails positively affects sympathy related perceived traits of an executive.

Hypothesis 3: Furthermore, the frequency of smiley usage determines the intensity of positive or negative effects from smiley usage (Ellensburg, 2012; Krohn, 2004; Yoo, 2007). Here, we hypothesize: The perception of characteristics of an executive that uses smileys in emails differs dependent upon the frequency of smiley usage.

Hypothesis 4: Finally, the acceptance of smiley usage is discussed to depend on the age of the recipient (Krohn, 2004). Hence, we hypothesize: The perception of characteristics of an executive that uses smileys in emails differs dependent upon the age of the recipient.

6.3.3 Method

We choose to conduct an online survey to analyze how competence, sympathy, as well as power, status and authority related perceived traits of an executive of an executive are affected, when smileys are used in e-mails to employees.

6.3.3.1 Measurement of perceived interpersonal characteristics

We next outline which perceived characteristics of executives we chose to investigate the interpersonal perception of executives in companies when using smileys. The perceived characteristics represent the dependent variables of this study.

According to Cuddy, Fiske, and Glick (2008), interpersonal perception is mainly affected by the perceived *warmth* (warmth, sympathy) and *competence* of people. Rosenberg, Nelson, and Vivekananthan (1968) structured personality impressions along the dimensions *good-intellectual* and *good-social*. Wojciszke, Bazinska, and Jaworski (1998) relate accessible traits to the dimensions *morality* and *competence*. The image theory introduced by Alexander, Brewer, and Livingston (2005) proposes a functional model which explains how outgroups are appraised by three different categories of traits: *intergroup goal compatibility*, *relative status*, and *power to attain goals*.

While competence and sympathy related constructs are well established in theory (Cuddy et al., 2008; Rosenberg et al., 1968; Wojciszke et al., 1998), we decided to add the constructs of power, status and authority. Based on the general idea of Alexander et al. (2005), we found it reasonable and necessary to also add a power and status related category of traits as dependent variables. We argue, that in an organizational context, power, status and authority related traits are specifically important when evaluating executives. Executives not only need to be competent and sympathetic, they first and foremost need to assert the interests of the company which requires additional types of skills. Thus, we choose to add power, status and authority related traits to the study.

We present the construct structure of this study in Table 26. Thereby, we highlight the constructs that primarily determined the three areas of relevant traits of executives in bold.

Construct structure derived from theory		Cuddy et al., 2008	Rosenberg et al., 1968	Wojciszke et al., 1998	Alexander et al., 2005
Competence related constructs	<<	Competence	Good-intellectual	Competence	Intergroup goal compatibility
Power, status and authority related constructs	<<	Competence	Good-intellectual	Competence	Relative status , power to attain goals
Warmth (Sympathy) related constructs	<<	Warmth	Good-social	Morality	Intergroup goal compatibility

Table 26 Construct structure of study 4 - The role of communicational behavior of executives in the age of ESNs

Source: Own illustration

Based on the construct structure presented in Table 26, we analyzed theory and chose those personal traits that we found to be best ascribed to executives, namely professional, meritocratic, self-confident, kind, sincere, reasonable, motivating, financially successful, and assertive, does not accept responsibility, represents his position in the company appropriately, and the perceived confidence in the executive.

We present the dependent variables chosen and their origin in Table 27. Thereby, we relate traits with a rather low complexity to the dependent variables. In this simple and straight forward way, we provide a harmonious impression on the sense in which we use the dependent variables within the study.

As an example, we describe the operational variable *professional* in the sense that an executive is capable, competent, intelligent, serious, determined, persistent, organized, self-disciplined, thorough, knowledgeable, formal and that the executive has a high sense of duty. We outline the explanatory traits and its theoretical origin for every dependent variable in Table 27.

During the survey we ask the participants:

How [professional, meritocratic, self-confident, kind, sincere, reasonable, motivating, financially successful, assertive] would you characterize the executive? Do you think the executive [does not accept responsibility, represents his position in the company appropriately]? How would you rate your [confidence in the executive]?

Operational variables		In a sense of	Cuddy et al., 2008	Rosenberg et al., 1968	C. Anderson, John, & Keltner, 2012	Leach, Ellemers, & Barreto, 2007	Costa Jr & McCrae, 1992	John, Srivastava, & others, 1999	Heckhausen, Dixon, & Baltes, 1989
Competence									
Professional	P	<<	Capable, competent, intelligent	Serious, determined, persistent	-	-	Organized, self-disciplined	Organized, thorough	Sense of duty, knowledgeable, formal
Meritocratic	M	<<	Meritocratic	Industrious	-	ambitious	Achievement striving	-	Disciplined, rational
Self-confident	SC	<<	Confident	-	Self-esteem	-	-	-	Self-confident, self-assured
does not accept responsibility (reverse-scored)	AR	<<	Responsible	Irresponsible	conscientiousness	-	-	-	Responsible
Warmth (Sympathy)									
Kind	K	<<	Kindness	Modest, good-natured	-	-	-	Kind, pleasant, good-natured	Sympathetic, kind
Sincere	S	<<	Sincere	Warm, sociable	-	-	Warm, gregariousness	Affectionate, warm	Understanding
Reasonable	R	<<	Wise	Cautious	-	-	Not careless	Responsible, reliable	Reasonable, serious, cautiously, level-headed
Power, Status & Authority									
Motivating	MO	<<	-	-	Ability to influence others	-	-	Energetic, enthusiastic	Charismatic
Represents his/her position in the company appropriately	RP	<<	-	Reliable, popular, serious	-	Prestigious	-	-	Dignified, cultured, loyal
Perceived confidence in the executive	C	<<	Trustworthy	Reliable	-	-	-	Trusting	Reliable, trustworthy
Financially successful	FS	<<	-	-	-	Successful	-	-	Successful
Assertive	A	<<	-	dominating	assertive	-	forceful	Assertive, dominant, forceful	Assertive, forceful

Table 27 Overview on the dependent variables of study 4 - The role of communicational behavior of executives in the age of ESNs

Source: Own illustration

6.3.3.2 Demographics and participants

We recruited the participants of the survey through personal contacts in social networks and partner companies. It was paid special attention to address both company employees and students with work experience to participate in the survey in order to obtain a meaningful range of ages and to include people with different professional experience and backgrounds. Around 73% of all participants held professional experience (on average about 5 years). Approximately 16% already worked in a management position (average: 9 years). A total of 55 participants took part in the survey (male: 30, female: 25). The participant's age was distributed as follows: 39 of them from 18 to 24 years old (71%), 12 participants between 25 and 34 years (22%) and four participants 34-59 years (7%). Participation in the online survey was possible between August 17th, 2015 and August 31st, 2015. We present an overview on the demographics of this study in Table 28.

Demographics	n	%	Ø
Participants			
Started the questionnaire	92	100	---
Finished the questionnaire	55	59.8	---
Sex			
female	25	45.5	---
male	30	54.5	---
Age			
18-24	39	70.9	25.3
25-34	12	21.8	
35-44	1	1.8	
45-59	3	5.5	
Experience			
Professional experience (years)	51	73	4.7
Leadership experience (years)	53	16	1.6

Table 28 Demographics of study 4 - The role of communicational behavior of executives in the age of ESNs

Source: Own illustration

6.3.3.3 Survey

6.3.3.3.1 Survey welcome

Initially, we introduce the online survey as a part of a research project that deals with the benefits and challenges in the research field of organizational communication. In addition, we deliberately refrain from disclosing the exact subject of the research to keep participants as unbiased as possible. We inform the participants that all data processed in the questionnaire is collected anonymously and kept confidentially.

6.3.3.3.2 Main part I: Investigating the impact of smiley usage

The main part I of the online survey consists of three different questionnaires. All three questionnaires initially describe fictitious organizational settings to the participants. The

participants are set in the situation of an employee of a multinational company with 95,000 employees that receives different messages in his/her e-mail mailbox. We introduce the texts in Table 29. The three different e-mail messages present three different business situations. More specific, the participants receive three e-mail messages that require the participant to take action on certain business topics, such as preparing a presentation or fixing a technical issue. The message texts are content wise identical in all three questionnaires. However, the message texts differ in the number of smileys they contain. We use a professional survey application that automatically assigns the participants randomly to one of the three questionnaires. We give an overview on the order and the number of smileys used within the questionnaires in Figure 27.

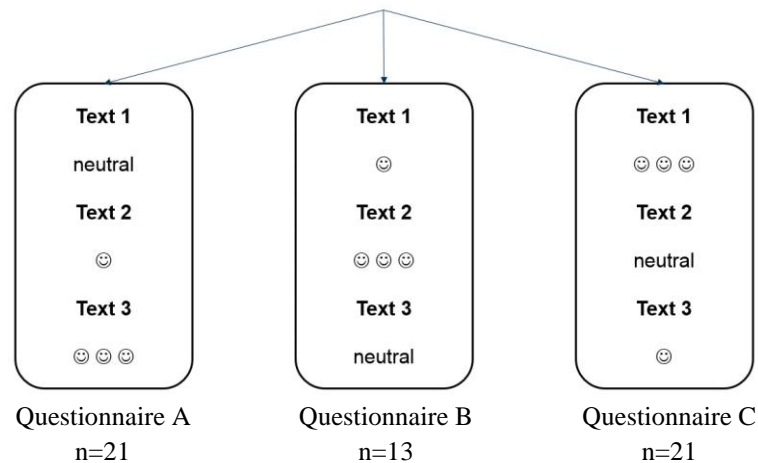


Figure 27 Randomizing function in the questionnaire

Source: Own illustration

As shown, we manipulated the texts by different combinations of smiley usage (neutral = no smileys, ☺ = one smiley, ☺☺☺ = three smileys). We present the exact positioning of the smileys in the different texts in section 10.3 Appendix – Study 4. Overall, 21 people were assigned to the questionnaire A (left), 13 people to the questionnaire B (center) and 21 people to the questionnaire C (right).

Within the questionnaires, we present three different business situations to the participants. More specific, the participants receive three e-mail messages that require them to take action on certain business topics, such as preparing a presentation or fixing a technical issue. The situation suddenly becomes special because an executive is the sender and smileys are used within the message.

Within the first text we describe a situation in which an employee is reminded by his/her supervisor to prepare for an upcoming important internal meeting. Within the second text, we describe a situation in which the executive reminds the employee to prepare a presentation for the upcoming board meeting including a strong praise for his/her previous performance. Within the third text, we describe the demand of an executive towards his employee to manage a technical issue that needs to be resolved as soon as possible. We subsequently present the three e-mail texts in Table 29.

Text 1	Text 2	Text 3
<p>Hello Mr. Parker,</p> <p>I would like to remind you briefly of the upcoming board meeting on Tuesday. The analysis of our current quarterly figures will be an extremely important agenda item here. A good preparation is essential for our company.</p> <p>Best regards,</p> <p>Markus Stark, Chief Executive Officer (CEO)</p>	<p>Hello Mr. Walter,</p> <p>I need you to prepare a final version of the interim results for our current project until next Thursday. A short presentation via PowerPoint in the board meeting would be desirable. Your commitment to the team is exemplary, keep it up!</p> <p>Best regards,</p> <p>Alexander Ehrenberg, Senior Vice President</p>	<p>Hello Mr. Englbrecht,</p> <p>Since last Monday, the complaints pile up regarding slow access times to our websites. Do you already have an idea how to get a grip on this problem? We cannot afford to make mistakes especially a few days before the company's fair. A quick turnaround would be desirable, I put my trust in you!</p> <p>Best regards,</p> <p>Maximilian Beck, Chief Operations Officer (COO)</p>

Table 29 **The three scenarios of the questionnaire**

Source: Own illustration

We select the names of the executives as homogeneous as possible to minimize adverse effects due to the naming. Furthermore, we choose to use male names to avoid gender related deviations. Finally, we choose to use the given names Markus, Alexander, and Maximilian, names that origin from Latin or Greek, and are associated with leadership or authority. In addition, official business titles are assigned, such as CEO, COO, or Senior Vice President, which represent leading positions in companies.

The participants evaluated the perceived characteristics of the executives directly after reading through each text. The perceived characteristics of the executives in scope of this study are presented next.

6.3.3.3 Main part II: Capturing participants opinion on the impact of smiley usage

After completing the three scenarios of main part I, we inform the participants about the specific research objective of this work. Thereby, we stimulate a reflection of the participants on the so far given answers. The survey is specifically designed in a way that the participants could not change their previous scores. Subsequently, we directly ask for the participants' opinion on the effects of smiley usage on the perceived traits of an executive. Representatively, we straightforwardly choose four main items from the construct structure presented in Table 27. Using a 7-point Likert scale, we ask:

Do you think that the use of smileys by an executive has a negative impact on his/her perceived *professionalism, sympathy, authority, and confidence in the executive*?

In addition, we add questions to determine the smiley use behavior of the participants. Thereby, we try to identify possible differences in the use of smileys between employees or between employees and executives. We ask:

On average, how many smileys would you use in an email to a superior? On average, how many smileys would you use in an email to a colleague? Have you experienced situation in which the use of smile has led to misunderstandings in communication?

6.3.3.3.4 *Commentary section and demographics*

In the commentary section of the study, we ask the participants to describe concrete situations in which smileys lead to misunderstandings in communication. In addition, we ask the participants to name so-called "no-go" smileys that he/she thinks derogate the communication with others. We, furthermore, ask how much smileys the participants integrate when applying their natural writing pattern. Finally, we ask the participants to state demographic information, namely gender, age, work experience and leadership experience within a company.

6.3.4 **Presentation of the results**

6.3.4.1 **Results of main part I of the survey:**

We present the results of this study within Table 30, Table 31, and Table 32. A compound representation of all three business situations is presented in Table 33. All scores of the perceived characteristics are arithmetically averaged and rounded to the first decimal place.

Results of **competence** related perceived traits of executives: Of all dependent variables, perceived *professionalism* of an executive is derogated most when using smileys throughout the study (-2.7). Within the competence related perceived traits, professionalism is followed by *meritocracy* (-1.7), *self-confidence* (-1.3), and *acceptance of responsibility* (0.5; reverse-scored).

Results of **warmth** (sympathy) related perceived traits of executives: Of all dependent variables, perceived *kindness* of an executive is enhanced most when using smileys throughout the study (1.1). Within the warmth related perceived traits, kindness is the only trait that got positively affected, the perceived *reasonability* (-1.3) as well as the perceived *sincerity* (-0.7) got derogated.

Results of **power, status & authority** related perceived traits of executives: Within this category, the perceived *appropriate representation of his/her position* is derogated most, when executives used smileys (-2.6). Within the power, status & authority related traits, the perceived appropriate representation of his/her position is followed by *assertiveness* (-1.6), *financial success* (-1.2), *trustworthiness* (-0.7), and *ability to motivate others* (-0.1). The direction of the effect of the dependent variable ability to motivate others changes dependent on the number of smileys used. When one smiley is used, the perceived ability to motivate enhanced (0.6).

Overall, results confirm **Hypothesis 1**: The usage of smileys in emails negatively affects competence, as well as power, status and authority related perceived traits of an executive.

The use of smileys negatively affects competence (*professional, meritocratic, self-confident, does not accept responsibility*) related traits as well as power, status and authority related perceived traits (*represents his/her position in the company appropriately, financially successful, assertive*) of executives. There is one exception, namely the perceived ability of a leader to motivate (*motivating*). Here, the perceived ability of a leader to motivate is evaluated stronger when using one laughing smiley as if no smileys are used. However, when three smileys are used, the positive effect turns negative.

Our results do not confirm **Hypothesis 2**: The usage of smileys in emails only partially reveals positive effects on sympathy related perceived traits of an executive.

The use of smileys in e-mails shows a positive effect on the perceived *kindness* of executives. By using one smiley or three smileys, the sender of the message is seen as friendlier (*kind*) in all three scenarios compared to when no smileys are used. The *reasonableness* and *sincerity* of an executive on the other hand is negatively or moderate negatively affected using smileys.

Perceived characteristics of an executive (7-point Likert scale)	Smileys used in scenario 1			Comparing means of scores			Effect
	0	☺	☺☺☺	0 vs. ☺	☺ vs. ☺☺☺	0 vs. ☺☺☺	
professional	5.5	3.6	2.2	-1.9	-1.4	-3.3	negative
represents position representative	5.2	3.9	2.4	-1.3	-1.5	-2.8	negative
meritocratic	5.8	5.2	3.5	-0.6	-1.7	-2.3	negative
reasonable	5.5	4.9	3.7	-0.6	-1.2	-1.8	negative
kind	4.2	5.8	6.0	1.6	0.2	1.8	positive
assertive	5.0	4.5	3.5	-0.5	-1.0	-1.5	negative
self-confident	5.5	5.4	4.1	-0.1	-1.3	-1.4	negative
financially successful	5.1	4.8	3.9	-0.3	-0.9	-1.2	negative
sincere	5.4	5.5	4.5	0.1	-1.0	-0.9	positive & negative
trustworthy	5.2	4.9	4.4	-0.3	-0.5	-0.8	negative
motivates others	3.9	4.6	4.3	0.7	-0.3	0.4	positive
accepts no responsibility	3.6	3.3	3.7	-0.3	0.4	0.1	positive & negative (reverse scored)

Table 30 Results of the descriptive analysis of business scenario 1

Source: Own illustration

Perceived characteristics of an executive (7-point Likert scale)	Smileys used in scenario 2			Comparing means of scores			Effect
	0	☺	☺☺☺	0 vs. ☺	☺ vs. ☺☺☺	0 vs. ☺☺☺	
represents position representative	6.1	5.1	2.8	-1.0	-2.3	-3.3	negative
professional	6.3	4.8	3.4	-1.5	-1.4	-2.9	negative
assertive	5.5	5.0	3.5	-0.5	-1.5	-2.0	negative
financially successful	5.8	4.9	4.1	-0.9	-0.8	-1.7	negative
meritocratic	6.0	5.2	4.5	-0.8	-0.7	-1.5	negative
accepts no responsibility	3.0	3.6	4.3	0.6	0.7	1.3	negative (reverse scored)
self-confident	6.1	5.4	5.0	-0.7	-0.4	-1.1	negative
reasonable	5.9	5.5	5.0	-0.4	-0.5	-0.9	negative
trustworthy	5.8	5.6	4.9	-0.2	-0.7	-0.9	negative
motivates others	5.9	5.9	5.3	0.0	-0.6	-0.6	negative
kind	5.5	6.1	6.0	0.6	-0.1	0.5	positive
sincere	5.7	5.9	5.8	0.2	-0.1	0.1	positive

Table 31 Results of the descriptive analysis of business scenario 2
Source: Own illustration

Perceived characteristics of an executive (7-point Likert scale)	Smileys used in scenario 3			Comparing means of scores			Effect
	0	☺	☺☺☺	0 vs. ☺	☺ vs. ☺☺☺	0 vs. ☺☺☺	
professional	5.5	4.3	3.5	-1.2	-0.8	-2.0	negative
represents position representative	5.4	4.8	3.6	-0.6	-1.2	-1.8	negative
self-confident	5.7	5.2	4.3	-0.5	-0.9	-1.4	negative
meritocratic	5.8	5.0	4.5	-0.8	-0.5	-1.3	negative
sincere	5.8	5.3	4.6	-0.5	-0.7	-1.2	negative
reasonable	5.8	5.0	4.6	-0.8	-0.4	-1.2	negative
assertive	5.1	4.2	3.9	-0.9	-0.3	-1.2	negative
kind	4.3	5.6	5.4	1.3	-0.2	1.1	positive
financially successful	4.8	4.5	4.1	-0.3	-0.4	-0.7	negative
trustworthy	5.1	4.9	4.8	-0.2	-0.1	-0.3	negative
motivates others	4.2	5.2	4.1	1.0	-1.1	-0.1	positive & negative
accepts no responsibility	3.9	3.9	3.9	0.0	0.0	0.0	neutral (reverse scored)

Table 32 Results of the descriptive analysis of business situation 3
Source: Own illustration

Perceived characteristics of an executive (7-point Likert scale)	Smileys used in scenarios 1-3			Comparing means of scores			Effect
	0	☺	☺☺☺	0 vs. ☺	☺ vs. ☺☺☺	0 vs. ☺☺☺	
professional	5.8	4.2	3.0	-1.5	-1.2	-2.7	negative
represents position representative	5.6	4.6	2.9	-1.0	-1.7	-2.6	negative
meritocratic	5.9	5.1	4.2	-0.7	-1.0	-1.7	negative
assertive	5.2	4.6	3.6	-0.6	-0.9	-1.6	negative
self-confident	5.8	5.3	4.5	-0.4	-0.9	-1.3	negative
reasonable	5.7	5.1	4.4	-0.6	-0.7	-1.3	negative
financially successful	5.2	4.7	4.0	-0.5	-0.7	-1.2	negative
kind	4.7	5.8	5.8	1.2	0.0	1.1	positive
sincere	5.6	5.6	5.0	-0.1	-0.6	-0.7	negative
trustworthy	5.4	5.1	4.7	-0.2	-0.4	-0.7	negative
accepts no responsibility	3.5	3.6	4.0	0.1	0.4	0.5	negative (reverse scored)
motivates others	4.7	5.2	4.6	0.6	-0.7	-0.1	positive & negative

Table 33 Results of the descriptive analysis over all three business situations
Source: Own illustration

The results of this study largely confirm **Hypothesis 3**: The perception of characteristics of an executive that uses smileys in emails differs dependent upon the frequency of smiley usage. We present the type of effect when three smileys are used instead of one in Table 34.

Over all scenarios, the effect of 0 smileys compared with 1 smiley was reinforced at ten of twelve characteristics when 3 smileys were used instead of 1 smiley, namely, *professional*, *represents position representative*, *meritocratic*, *assertive*, *self-confident*, *reasonable*, *financially successful*, *sincere*, *trustworthy*, *accepts no responsibility*. The effect reversed for the characteristic *motivates others* and the effect remained stable for the characteristic *kind*.

Type of effect on the perceived characteristics of an executive by increased smiley usage (when three smileys are used instead of one)	Scenario 1 (Table 30)	Scenario 2 (Table 31)	Scenario 3 (Table 32)	Scenarios 1-3 (Table 33)
Reinforcing effect	9	9	9	10
Mitigating effect	1	2	1	0
Reversing effect	2	0	1	1
Triggering effect	0	1	0	0
Neutral effect	0	0	1	1

Table 34 Effect types and results on frequency of smiley usage
Source: Own illustration

6.3.4.2 Results of main part II of the survey:

After presenting the three business scenarios to the participants, we directly ask them whether they think that smiley usage affects four representatively chosen perceived characteristics of an executive negatively, namely *professionalism*, *sympathy*, *authority* and *trustworthiness*.

The results indicate that using smileys derogates the perceived *professionalism* (4.9) and the perceived *authority* (4.6) of executives. In addition, the results indicate that the perceived *sympathy* (3.6) and *trustworthiness* (3.7) is slightly enhanced.

We present the results of main part II inclusive age-related differences in Table 35.

Our results support **Hypothesis 4**: The perception of characteristics of an executive that uses smileys in emails differs dependent upon the age of the recipient.

We find that people between 18 and 24 years (Group 1) perceive the influence of smileys on the perceived characteristics of an executive differently than people between 25 and 59 years (Group2). Group 1 scores the overall negative effect of smiley use on perceived traits *professional* and *authority* of executives considerably stronger than group 2. While the scores of group 1 do not indicate a negative impact of smiley use on perceived traits *sympathy* and *trustworthiness* of executives, group 2 also scores an overall negative effect of smiley use in this case.

In your judgement, does the use of smileys by superiors and executives have a negative effect on their perceived ... (7-point Likert-scale; scores in %)									
	Totally disagree 1	2	3	4	5	6	Totally agree 7	n	Ø
professionalism									
18-24	0	7.7	10.3	10.3	12.8	38.5	20.5	39	5,3
25-59	25.0	12.5	6.3	6.3	6.3	25.0	18.8	16	4,1
total	7.3	9.1	9.1	9.1	10.9	34.5	20.0	55	4,9
sympathy									
18-24	28.2	17.9	10.3	10.3	15.4	7.7	10.3	39	3,3
25-59	12.5	12.5	0	31.3	12.5	18.8	12.5	16	4,3
total	23.6	16.4	7.3	16.4	14.5	10.9	10.9	55	3,6
authority									
18-24	0	12.8	10.3	15.4	17.9	28.2	15.4	39	4,8
25-59	18.8	12.5	6.3	18.8	0	31.3	12.5	16	4,1
total	5.5	12.7	9.1	16.4	12.7	29.1	14.5	55	4,6
trustworthiness									
18-24	12.8	20.5	25.6	7.7	17.9	5.1	10.3	39	3,5
25-59	12.5	18.8	0	25.0	12.5	18.8	12.5	16	4,1
total	12.7	20.0	18.2	12.7	16.4	9.1	10.9	55	3,7

Table 35 Results of the age-related descriptive analysis of main part II of the survey
Source: Own illustration

We present accompanying results and additional material such as web-diagrams in the appendix in section 10.3 Appendix – Study 4.

6.3.5 Discussion

Within this section we provide arguments explaining the presented results. Furthermore, we outline their theoretical and practical implications.

6.3.5.1 Discussion of the results

Overall, we categorize and explain the results based on whether the perceived trait is in general seen to be beneficial for the company. It is just logical, that everything that is directed to jeopardize the success of a company is a possible threat to the workplace of that employee and thus his income, prosperity, security and strategic foundation. Thus, the participants seem to link smiley usage with kindness and kindness to be biased as problematic when it comes to the traits that are seen to be essential to generate and preserve a company's success.

Within our study, only the perceived kindness was consistently increased when using smileys. The competence related traits of executives, specifically perceived *professionalism* and *meritocracy* received negative scores when smileys were used. Also power, status & authority related traits of executives, namely the perceived *assertiveness*, the perception whether the *executive represents his/her position in the company appropriately* and whether he/she is seen as *financially successful* are significantly derogated when smileys are used. This clearly shows that at least on an executive level, smiley usage – which is usually related with being open and showing feelings – is penalized. Interestingly, the courage of an executive to use smileys was not rewarded and the perceived *self-confidence* was also strongly derogated. We find it astonishing that the perceived *willingness to take responsibility* as well as the perceived *trustworthiness* was not penalized that clearly. A possible explanation might be that the perceived *willingness to take responsibility* was designed reverse-scored which could have had a mitigating effect. In addition, participants might have interpreted *trustworthiness* as the personal trustworthiness of the person and not of the executive which would explain the moderate derogation of this variable. The scores for the perceived ability of executives to *motivate others* outline a positive effect when one smiley is used and a negative effect when three smileys are used. This nicely depicts the small opportunity window that smiley use offers today. It underlines that executives can indicate a positive attitude of the e-mail sender to the recipient by parsimony smiley usage, “everything else” is penalized. Overall, even in the age of ESNs, the traditional leader is still expected to keep distance.

We found it surprising that people aged 25 to 59 years of age perceived the influence of smileys on the professionalism of an employer less negatively than younger people from 18 to 24 years. We argue that specifically young people clearly distinguish between social communication in a private and informal setting and a business setting. Young people that just started a professional career might expect a change compared to their former “teenager” life. They might find it specifically inappropriate when executives use smileys (as their mates do) and don't keep a professional distance in their communication behavior.

As the effect of smiley use was by trend and size similar for the perceived characteristics in all three texts, we argue that the scenarios only played a minor role with rather marginal influence. However, an exception is scenario 2 in which the executive combines the assignment of a task

(prepare a presentation) with a direct praise ("Your commitment to the team is far exemplary, keep it up!"). We argue that smiley usage has a positive effect, when it underlines an emotion related to something that in a broad sense develops the workplace of an employee and thus his income, prosperity, security and strategic foundation. A positive appraisal in general enhances the chances to e.g. get promoted or receive a salary increase.

6.3.5.2 Implication to theory

Our results provide several contributions to theory. Our results show that the use of smileys affects interpersonal perception of an email sender (in our case an executive) in CMBC (Ellensburg, 2012; Skovholt et al., 2014; Yoo, 2007). Our results support the assumption that smileys help to convey an important aspect of the utterance to which they are attached (Dresner & Herring, 2010). Moreover, our results are in line with the results of Byron and Baldrige (2007) who found that the receiver searches for clues such as smileys in order to form an opinion about the transmitter due to a lack of non-verbal clues in communication through e-mail. The results confirm that the use of smileys in the business world worsens the perception of the sender (Byron & Baldrige, 2007). In addition, the observations on the dependent variables perceived *kindness* and *ability to motivate others* show that smileys serve as indicator for a positive attitude of the e-mail sender to the recipient (Skovholt et al., 2014).

6.3.5.3 Implication to practice

Our results offer various contributions to practice. We found that the negative effects of using smileys significantly outweigh the positive effects. The results support executives and leaders responding to the increased importance of emoticons and social communication in business communication. We interpret the results as following: "First, use smileys consciously, carefully and parsimonious. Second, use smileys only when you want to strengthen a personal relationship, and only add tasks or business context in a message when you aim to motivate the recipient by not putting pressure on him/her". Overall, our results provide a powerful and simple guidance to understand the impact of smiley use. Thereby we not only provide guidance for a cautious future communication behavior but also a "room for reflecting" former communication behavior.

6.3.5.4 Limitations of the study and future research

Despite the thorough and well-founded study design, a reflection of the research process indicates some limitations which we would like to address by the following suggestions for future research: We already provide a broad theoretical foundation and thoroughly justify the selected constructs and dependent variable. For future research, we recommend adding a perceived characteristic *subject-matter expertise* to allow a more differentiated view on competence related perceived traits. In addition, we recommend to add "imaginative" as a dependent variable to increase understanding of the effect of smiley use on the perceived openness of the executive (John et al., 1999). We suggest a reflection of our research based on the distinction between direct and indirect perceived adaptive consequences in order to understand the effect of smiley use on characteristics that predominantly help the executive to directly perform tasks or to indirectly help him/her by activating and motivating others (Peeters, 1993). With regard to the two age groups we used to investigate the moderating effect of age

(Group 1: 18-24 years; Group 2: 25 to 59 years), a larger sample would help to generate more granular and precise results. Finally, we recommend repeating the study addressing both executives and superiors. In retrospect, the distance towards an executive might be larger than towards a superior and it would be interesting whether the results can be reproduced for leaders with less distance to the employee.

6.3.6 Conclusion

Smileys are an important tool for compensating the lack of non-verbal hints in CMBC. The impact smiley use on interpersonal perceived characteristics of persons in CMC or CMBC is relatively unexplored. Recent studies show that the use of smileys in CMBC negatively impacts the perceived characteristics of the sender.

Unlike existing research, this study purely focuses on the interpretation of an executive as a person that is sending an email to one of his employees in order to analyze how smiley usage affects the perceived characteristics of executives. Hence, we analyze how smiley use affects competence, warmth and power, status and authority related perceived traits of executives.

Our results show that the use of smileys in company-internal emails predominantly derogates the perceived characteristics of an executive largely. However, there are exceptions, namely kindness and the ability to motivate others. Overall, the positive effects of smiley use are little and completely overshadowed by negative effects. Despite the high risk of negative effects, a conscious and parsimonious use of smileys has positive effects in a work context.

7 Organizational change associated with ESNs

7.1 Disclosure of integrated publication

This chapter contains, among further results, extensive discussions and vast complementary material, in chapter 7.6.2 the word-by-word, complete actual content of the following “open access” publication of which I am the main author:

Oettl, C. A., Beck, K., Raufer, F. M., Priglmeir, A. T., Böhm, M., & Krcmar, H. (2018). Zero Email initiative: a critical review of Change Management during the introduction of Enterprise Social Networks. Journal of Information Technology Teaching Cases, 8(2), 172–183.

The exact take-over positions from the publication are documented in chapter 10.4.1 *Details on integrated publication* within *Appendix – Study 5*.

In this chapter, we also present theoretical background material (chapters 7.3 and 7.4) as well as teaching instructions (chapters 7.6.1 and 7.6.3) that have been jointly developed with the co-authors of the aforementioned article and are not published with the aforementioned article.

7.2 Introduction

As customers, competitors and markets move faster and faster nowadays, organizations have to adapt rapidly. Changes, whether large or small, within an organization, become almost daily business. The power to change became a measure to assess future success of a company (Beer & Nohria, 2000). The importance of good strategies to transform organizations effectively increases. Well-planned change processes improve the success rate of change projects. But also awareness and knowledge of problems arising during a change should not be underestimated. Such issues can be figured out and explained by the Diffusion Theory (Rogers, 2003), which categorizes types of people and their attitude towards change on an organizational level.

7.3 Underlying work and theoretical background

This chapter presents theoretical background material that has been jointly developed with the co-authors of the following article, presented in chapter 7.6.2:

Oettl, C. A., Beck, K., Raufer, F. M., Priglmeir, A. T., Böhm, M., & Krcmar, H. (2018). Zero Email initiative: a critical review of Change Management during the introduction of Enterprise Social Networks. Journal of Information Technology Teaching Cases, 8(2), 172–183.

This theoretical background material presented here is not published with the aforementioned article.

7.3.1 Change Management

7.3.1.1 What is Change Management?

Change Management itself is a relatively young discipline, making defining important terms difficult. The discipline did not even appear in business until the 1990s. The basic groundwork of the topic had been done before, especially getting a general understanding of how humans

behave when confronted with change. The outcomes of studies delivered some important findings on how to successfully implement change. One important researcher is Kurt Lewin, a social psychologist who constituted the foundations of Change Management theory. In 1947, Lewin stated that there are three states of change, which will be explained in detail later (Creasey, 2016).

As already mentioned, Change Management made its appearance in business in the 1990s, now not only being concerned with the human viewpoint, but with developing concepts for business. This includes shaping a common language and guiding principles around Change Management. John Kotter is one researcher who played an important role in this phase, introducing an eight-stage process to implement change in his book “Leading Change” from 1996. Again, Kotter’s approach to change will be explained later (Creasey, 2016).

During the 2000s the theory of Change Management was finally seen as a discipline, which made it necessary to formalize and structure the whole topic. Processes and tools, as well as positions and job roles had to be defined. Up until now, there are of course still topics in Change Management that can and should be researched, for example the collaboration of change disciplines or the organisations’ capability to change (Creasey, 2016)

After this short overview of the history of Change Management, it is clear that Change Management is a relatively young discipline, and therefore there is not the one exclusive definition of the topic. Often similar terms like Organizational Change are used synonymously with Change Management. G. R. Jones (2010) defines Organizational Change as a “process by which organizations move from their present state to some desired future state to increase their effectiveness.”. In “The Theory and Practice of Change Management”, John Hayes (2002) on the other hand defines Change Management as the following: “Change Management is about modifying or transforming organizations in order to maintain or improve their effectiveness.”. These two definitions point out the two main factors of Change Management: a transformation and the goal of increasing the effectiveness.

In order to manage change successfully, organisations can be geared to theoretical models of Change Management. Many approaches also make an important distinction between different types of change. For example, Jones differs between evolutionary and revolutionary change, which are dealt with in different ways (G. R. Jones, 2010). Seven important theories, which have made a significant impact in the Change Management literature, are described in the following and depicted in Figure 28:

1. Lewin: Three Phases of Change (1947)
2. Kotter: Eight-Step Process of Creating Major Change (1996)
3. Watzlawick: First- and Second Order Change (1974)
4. Atos: Social Collaboration Lifecycle (2012)
5. Cummings & Worley: General Model of Planned Change (2015)
6. Lippitt: Seven Phases of Planned Change (1958)
7. Prosci: ADKAR Model of Essential Change Outcomes (2017)

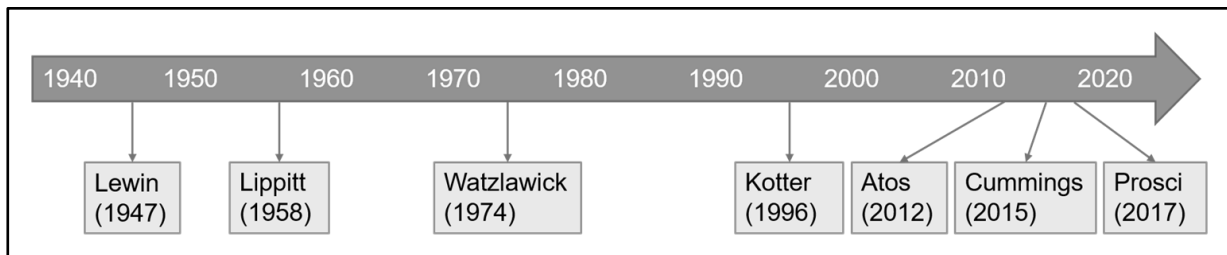


Figure 28 Timeline of change models

Source: Own illustration

7.3.1.2 Change management models

7.3.1.2.1 Three Phases of Change – Kurt Lewin

In 1947, Kurt Lewin presented the change process divided into three steps as shown in Figure 29. Many models which were developed later, are based on this subdivision, wherefore Lewin's theory is one of the most important ones concerning Change Management.

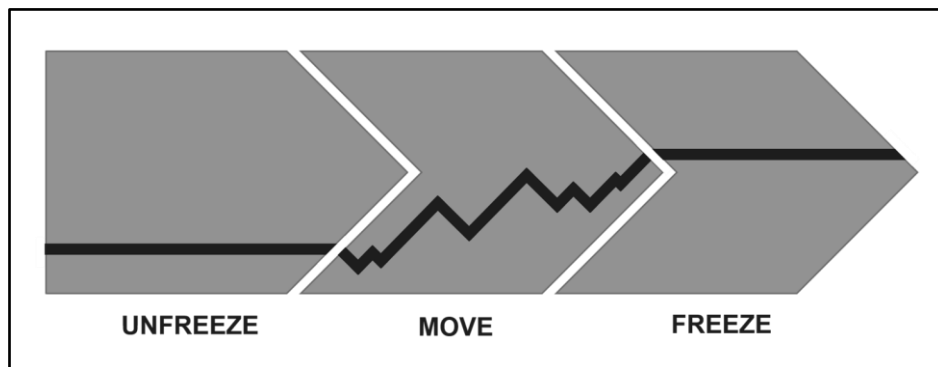


Figure 29 The Three Phases of Change

Source: Lewin (1947)

Step 1: Unfreeze

In this first step, the current state has to be broken down. To be able to fulfill this task, it is necessary to understand the organizations status quo with its underlying beliefs, values, attitudes and behaviors as well as the need for change. To carry out the change successfully, a change message has to be communicated. This change message has to be clear to understand and create a vision. Ideally it should be supported by evidence, such as declining sales figures or poor financial results. Through this step, a controlled crisis will be created, so people will seek out a new equilibrium state. The support from the upper management is mandatory as well as managing and understanding doubts and concerns about the change (Lewin, 1947).

Step 2: Move

This step involves the change in action. New ways of doing things are applied, and beliefs and acts are starting to change to support the new direction. To succeed in this phase, people need to understand the change and its benefits. This can take a while, as some people will also be negatively affected by the change, so it is important to prepare and involve people in the process. Some key factors for the success are time, communication, education, support, hands-on-management, empowering action and dispelling rumors (Lewin, 1947).

Step 3: Freeze

To be able to get to this stage, the changes have to be taking shape, people should be embracing the new ways of working and the organization has to appear stable to the outside. If these prerequisites are fulfilled, the internalization and institutionalization of the change can take place. This includes making sure that the changes are used on a daily basis, ensuring leadership support, creating a reward system, acknowledging individual efforts and adapting the organizational structure as necessary. After that, a new status quo has been achieved and a sense of stability appears. This can be supported by trainings, feedback systems and celebrating the change success to ensure closure (Lewin, 1947).

7.3.1.2.2 Eight-Step Process of Creating Major Change – John P. Kotter

This theory was published by John P. Kotter, Professor at the Harvard Business School, in his book ‘Leading Change’ in 1996. His model is based on ‘The three phases of change’ by Kurt Lewin and consists of eight specific steps that ensure successful change when followed in the right order. Figure 30 shows these stages.

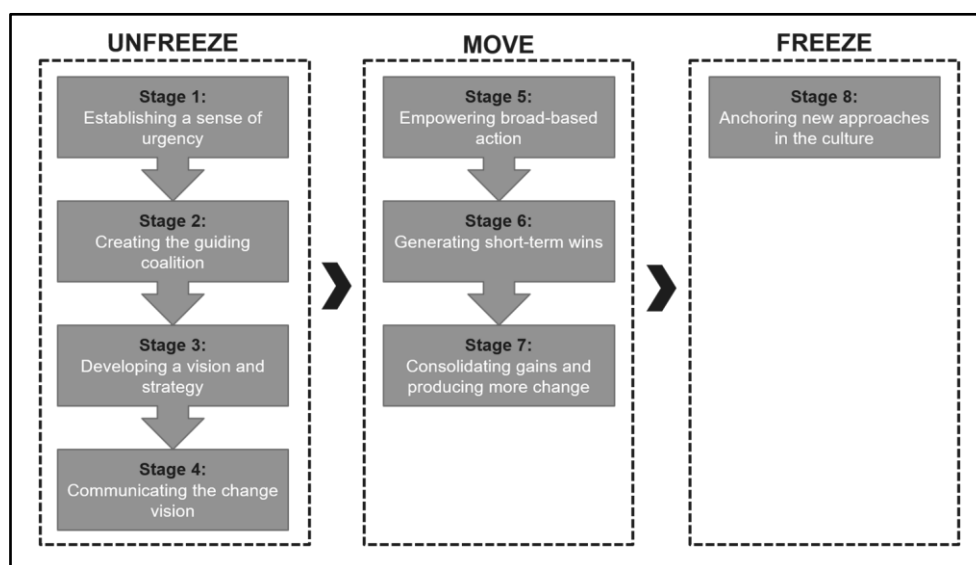


Figure 30 The Eight-Step Process of Creating Major Change
Source: Kotter (1996) – own illustration

Step 1: Establishing a sense of urgency

Within the first step of the process the market and competitive realities should be examined in order to identify and discuss crises, potential crises and major opportunities. Communicating potential threats will catch the people's attention and push up the urgency level for the need of change. This step is important to gain the needed cooperation (Kotter, 1996).

Step 2: Creating the guiding coalition

To guide a transformation process, a powerful force is needed. Even though transformations are often associated with highly visible individuals, a single person will not be powerful enough to drive the change process within today's business environments. A team must be built on trust and common goal and promoted with the help of team building events to achieve a strong coalition (Kotter, 1996).

Step 3: Developing a vision and strategy

The vision-based method is the right transformation method to guide a change process. It clarifies the general directions for change, motivates people in the right direction and helps coordinate actions in a fast and efficient way. Additionally, strategies for achieving the vision must be developed (Kotter, 1996).

Step 4: Communicating the change vision

After developing a vision, it should be communicated in an effective way by constantly using all communications vehicles. Clarity and simplicity of the conveyed message is key to its success. The guiding coalition should role model the behavior expected from the employees (Kotter, 1996).

Step 5: Empowering employees for broad-based action

Barriers to empowerment need to be eliminated. It is necessary to get rid of obstacles by changing systems and structures that undermine the vision. Risk taking and nontraditional ideas, activities and actions should be encouraged (Kotter, 1996).

Step 6: Generating short-term wins

In order to maintain the credibility of the change process short-term wins need to be generated. They provide evidence that the short-term costs are worth it (Kotter, 1996).

Step 7: Consolidating gains and producing more changes

The increased credibility should be used to change all systems, structures and policies that do not fit the transformation vision. People who can implement the change vision should be hired, promoted and developed. Additionally, the process should be reinvigorating with new products, themes and change agents (Kotter, 1996).

Step 8: Anchoring new approaches in the culture

The final step includes creating better performance through better leadership and more effective management and ensuring leadership development and succession. Connections between new behaviors and organizational success must be articulated (Kotter, 1996).

7.3.1.2.3 Model of First- and Second-Order Change – Paul Watzlawick

In 1974, Paul Watzlawick distinguished between two forms of change:

1. First-Order Change
2. Second-Order Change

A First-Order Change is a change within a system while the system itself remains unaltered. A Second-Order Change on the other hand is a change of the system itself. In contrast to first-order changes, it is transformational, irreversible and requires new learning (Silic, Back, & Silic, 2015).

In “Change – Principles of Problem Formation and Problem Resolution” Watzlawick deals more with the topic of how problems occur and how they can be solved than with the actual change process of how to get to the solution. Also, the book is concerned with the practical treatment of human problems, not with change within an organization. However, some steps of change practice are defined and can be adapted to an organizational level (Watzlawick et al., 1974). These steps are described in Figure 31.

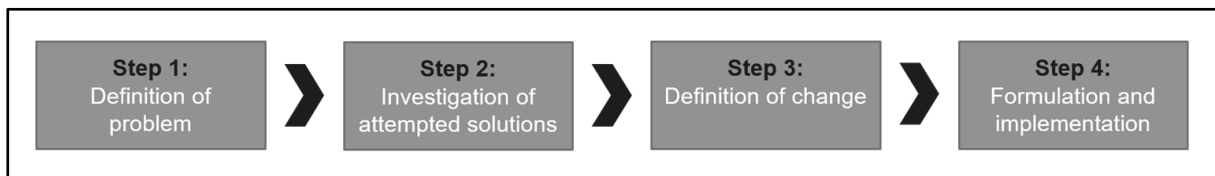


Figure 31 Model of First- and Second-Order Change

Source: Watzlawick et al. (1974) – Own illustration

The first step involves a clear and concrete definition of the problem. The second step follows with an investigation of solutions that have been tried before. Following, the third step is concerned with defining the concrete change that should be achieved. The fourth and last step then is the formulation and implementation of a concrete plan, so the actual process of change happens in phase 4 (Watzlawick et al., 1974).

7.3.1.2.4 Social Collaboration Evolution Lifecycle – Atos

The lifecycle was published by Atos and consists of several phases that show how to become a Zero Email company, illustrated in Figure 32. They all were supported by transparent communication within the company (Atos, 2012b).

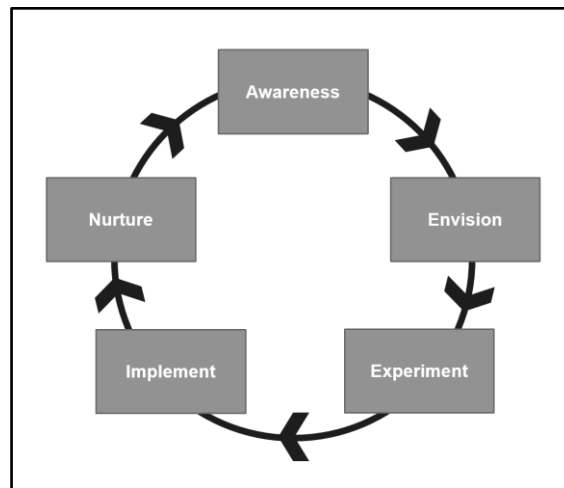


Figure 32 The Social Collaboration Evolution Lifecycle

Source: Atos (2012b) – Own illustration

Awareness

Creating awareness among employees about the importance of the initiative was achieved with smaller initiatives such as email checks, inspirations sessions, the “Zero Email game”, quick scans, the “Zero Inbox” and the “Zero Email network” (Silic et al., 2015).

Envision

Through the envision phase the Atos strategy is supported by proposing roadmaps and building requirements necessary to succeed. Steps within this phase include maturity scans, work style analysis and developing roadmaps, business cases (Silic et al., 2015).

Experiment

The experimental phase is used to pilot the project and produce quantifiable key performance indicators (KPIs) by analyzing processes and networks, developing personas and actively managing communities (Silic et al., 2015).

Implement

During the implement phase the program implementation is executed and supported by active communication and a Change Management support structure. KPI dashboards and deployment programs are necessary tools (Silic et al., 2015).

Nurture

The final phase concerns the program evaluation and ways it can be improved based on key lessons (Silic et al., 2015).

7.3.1.2.5 General Model of Planned Change – Cummings and Worley

In the 10th edition of “Organizational Development & Change”, Cummings and Worley (2015) describe their “General Model of Planned Change”. Before going into detail about different phases of the process, we will explain the term “planned change”. Planned Change is defined by three dimensions: the magnitude of change, the degree to which the client system is organized and whether the change takes place in a domestic or an international setting.

Concerning the magnitude of change, the change can be either incremental or fundamental. An incremental change is characterized by a context with an existing strategy, structure and culture of an organization, limited dimensions of the organizations and is executed in order to improve the current state of an organization. A fundamental change on the other hand is aimed at significantly changing the way the organization operates. The change can concern many dimensions (culture, work design, information process, etc.) and levels (top-level management, departments, work groups, individual jobs).

The degree to which an organization is organized ranges from overorganized to underorganized. Overorganized organizations can have too inflexible policies, procedures, leadership styles etc. Conflicts are typically avoided and employees can be pathetic. The communication between top- and lower levels is often suppressed. In contrast, underorganized organizations have too little constraint, fragmented communication and not clearly defined job responsibilities.

The third and last dimension is the setting. Traditionally, Organizational Development (OD) is implemented in western societies. Therefore, OD is biased by these western cultures and their values. This can be a problem when OD is applied in culturally different societies, so the process should be adopted properly.

The model states four phases for organizational change, represented graphically in Figure 14. However, the process is not necessarily linear as it can include some overlaps of the phases and feedback between them (Cummings & Worley, 2015).

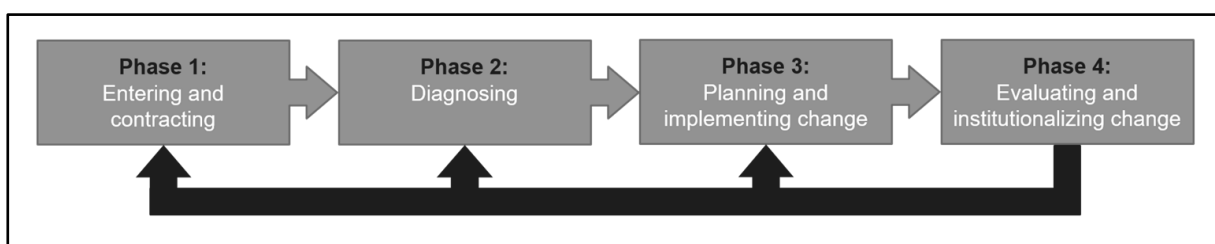


Figure 33 The General Model of Planned Change

Source: Cummings and Worley (2015) – Own illustration

Phase 1: Entering and contracting

In this first phase of the process, managers have to decide about continuing to execute the planned change or not and which resources need to be committed. Initial data has to be collected in order to fully understand the problem. To develop a contract, these problems have to be discussed with the managers. The contract should include the future

change activities, resources to be committed and how different people will be involved. In case of disagreements about the need for change, meeting of resource constraints or the possibility of using a more feasible change method, this phase can already be the end of the process (Cummings & Worley, 2015).

Phase 2: Diagnosing

Diagnosing represents one of the most important activities in Organizational Development. During this phase, the client system has to be studied in detail, concentrating on understanding the problems, their causation and their consequences, and on gathering what is positive in the organization. This phase also includes the tasks of finding and selecting a suitable model to understand the organization, and collecting, analyzing and feeding back information concerning the problem to all organization members (Cummings & Worley, 2015).

Phase 3: Planning and implementing change

In this stage, the practitioners and organization members design and actually implement interventions. They have to be planned in such a way that they help to achieve the overall vision and goals. During designing some criteria have to be considered: the organization's readiness as well as its change capability, culture and power distributions and the Change Agent's skills and abilities. It is also important to distinguish between different types of interventions:

1. Human process interventions
2. Interventions aimed at modifying the structure and technology of an organization
3. Human resource interventions
4. Strategic interventions (Cummings & Worley, 2015)

Phase 4: Evaluating and institutionalizing change

In this last phase, the effects caused by the interventions will be evaluated and fed back in order to decide on whether the change should be continued, modified or stopped. For successful changes, it is important to manage the institutionalization of these changes, for example by providing rewards, trainings and feedback (Cummings & Worley, 2015).

7.3.1.2.6 Seven-Phases of Planned Change – Ronald Lippitt

This theory was published in a book called “The Dynamics of Planned Change” in 1958 by Ronald Lippitt, Jeanne Watson and Bruce Westley. The original 3-steps approach of Kurt Lewin highly stimulated and inspired Lippitt's model, wherefore it is an enhancement and extension by four more phases, shown in Figure 34 (Lippitt, Watson, & Westley, 1958).

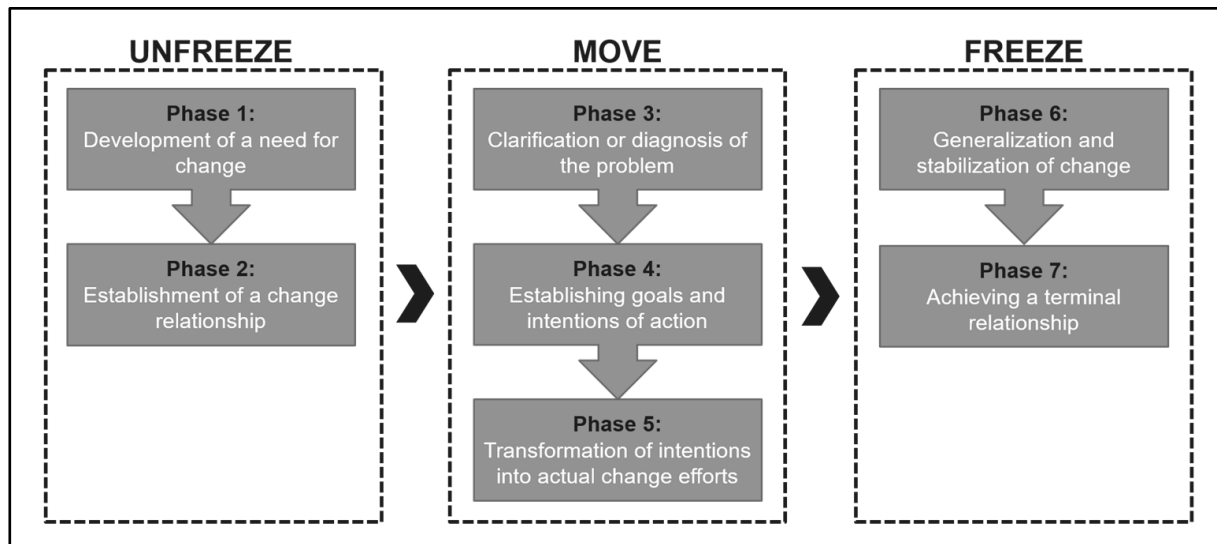


Figure 34 The Seven-Phases of Planned Change
Source: Lippitt et al. (1958) – Own illustration

Phase 1: Development of a need for change

First of all, an internal or external Change Agent should discover a certain problem, creating an awareness for it and therefore induce a desire for change, as well as the need for help from outside the organization. As a next step, a detailed changing plan with an appropriate time schedule should be developed and published for all employees. Nevertheless, allowing the people to experiment and test their initiatives must not be underestimated. In this phase, effective communication should also start (Lippitt et al., 1958).

Phase 2: Establishment of a change relationship

Motivation and capacity for change are evaluated and constant communication with the possibility for employees to provide feedback should be driven forward. Another important point is the acceptance of the Change Agent and the urge to cooperate with him to pursue the common change goal. Conducting the force-field analysis by Lewin (1943) to identify driving and restraining forces helps to develop strategies for reducing resistance. Exemplary strategies for strengthening driving forces could be giving better recognition or increasing remuneration and for reducing restraining forces, increasing the fear of job loss (Lippitt et al., 1958).

Phase 3: Clarification or diagnosis of the problem

Figuring out, testing and evaluating the problem is a major issue of the Change Agent. External hired agents can be more objective than agents from within the organization, but also more cost intensive. Moreover, it takes much more time for external Change Agents to get started with their tasks and often employees see them as a threat to their career (Lippitt et al., 1958).

Phase 4: Establishing goals and intentions of action

The change process is defined and written down as a final plan taking the force-field analysis, Change Agent's status, staff and costs into account. Furthermore, each member of the change team is assigned to a responsibility and several tasks. As people's cultures often differ because of their age, sex, knowledge and experiences, Change Agents might consider different change strategies for different groups of employees (Lippitt et al., 1958).

Phase 5: Transformation of intentions into actual change effort

The Change Agent becomes an active part of the change process within the organization. Managing staff and supporting the change are main tasks besides again conducting several force-field analyses (Lewin, 1943) because of possibly intensified resistance. Now, intentions turn into efforts (Lippitt et al., 1958).

Phase 6: Generalization and standardization of change

This phase is concerned with maintaining the change whilst it becomes a stable part of the organization. To ensure a good progress, communication and feedback on progress must be supported by the Change Agent, as well as sustaining motivation for example by providing intensive trainings (Lippitt et al., 1958).

Phase 7: Achieving a terminal relationship

The Change Management process should be concluded on an agreed date, marked by the evaluation and withdrawal of the Change Agent. An analysis, whether methods and standards have changed and improved, should also be conducted (Lippitt et al., 1958).

7.3.1.2.7 ADKAR Model of Guiding Individual an Organizational Change – Prosci

The ADKAR model was created by Jeff Hiatt, the founder of Prosci, a well-established company that helps individuals and organizations to build change management capabilities. ADKAR is an acronym that represents *awareness*, *desire*, *knowledge*, *ability* and *reinforcement*. The ADKAR model comprises five outcomes an individual must achieve for change to be successful and is presented in Figure 35 (Prosci, 2017).

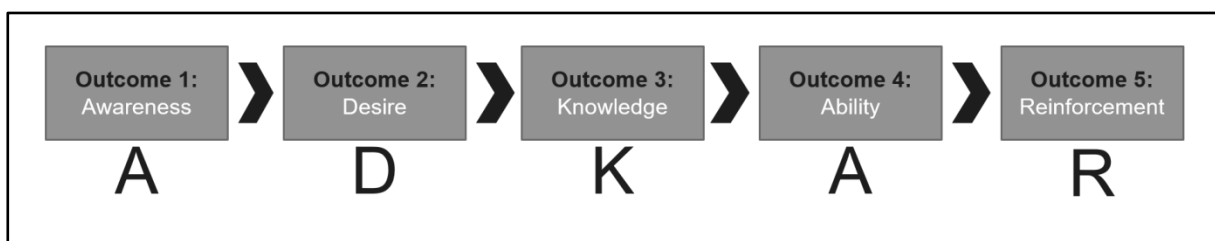


Figure 35 The ADKAR Model

Source: Prosci (2017) – Own illustration

Outcome 1: Awareness

The first outcome that needs to be achieved is the “Awareness of the need for change”. This can be realized by explaining business drivers or opportunities that have resulted in the need for change, addressing why change is needed and explaining the risks of not changing (Prosci, 2017).

Outcome 2: Desire

Desire is defined as the outcome where the individual makes the personal decision to support and participate in the change by translating the reasons for change into personal and organizational motivating factors. This can be supported by key business leaders that sponsor change and managers and supervisors that function as coaches for employees during the process (Prosci, 2017).

Outcome 3: Knowledge

Providing the necessary knowledge for change enablement can be achieved by delivering training and using specialists who focus on education (Prosci, 2017).

Outcome 4: Ability

During this outcome, the change finally takes place. Individuals demonstrate the required change result achieving expected performance results by translating their knowledge into ability in terms of their performance. Knowledge and skills must be fostered and the progress needs to be monitored by using continuous feedback (Prosci, 2017).

Outcome 5: Reinforcement

After the initial change has taken place the mechanisms and approaches need to be encompassed so that the new ways stay in place. This outcome must be proactively planned and needs concerted effort and time (Prosci, 2017).

7.3.2 Innovation Diffusion Theory

In his book “Diffusion of Innovations” Everett M. Rogers defines Diffusion as “the process by which an innovation is communicated through a certain channel over time among the members of a social system.” (Rogers, 2003).

The four main elements in this definition are innovation, time, communication channels and social system. An innovation is an idea, practice or object which is perceived as new by the ones who adopt it. Time plays an important role, because it is involved in the terms innovativeness and rate of adoption, which will be defined later. A communication channel is the way, by which a message is transmitted from one individual to another. The social system is defined as a set of units, engaged in joint problem solving to reach a common goal. Therefore, Diffusion Theory explains the diffusion and adoption of information systems on an organizational level.

7.3.2.1 Rate of adoption

The rate of adoption is a central term in Diffusion Theory and is defined as the “relative speed with which an innovation is perceived as being better than the idea it supersedes.” (Rogers, 2003). Several characteristics of an innovation determine this rate as shown in Figure 36.

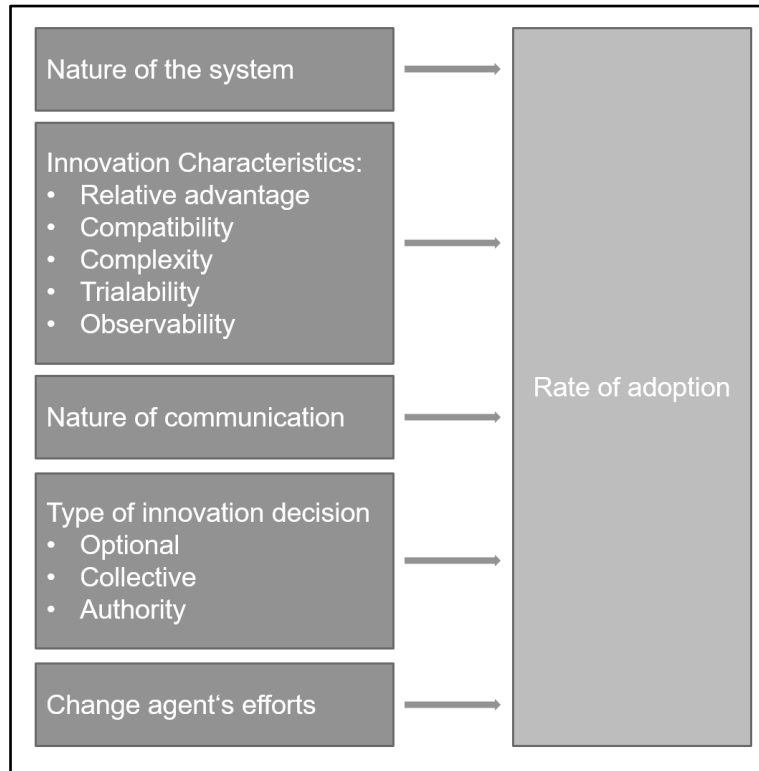


Figure 36 Influences on Rate of Adoption

Source: Rogers (2003)

The first and most important one is the relative advantage, which is the “degree to which an innovation is perceived as being better than the idea it supersedes”. This is often perceived as economic profitability or social prestige. Second and less important than the first characteristic, the compatibility of the innovation, defined as “the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters”. An innovation can be seen as compatible with sociocultural beliefs, previously introduced ideas, or the client needs for the innovation. The next characteristic, again a little less important than the previous one, is the complexity of an innovation. It is defined as “the degree to which an innovation is perceived as relatively difficult to understand and use”. Trialability, the “degree to which an innovation may be experimented with on limited basis”, is another characteristic. This is generally more important to earlier adopters than to later adopters. The last one is observability, “the degree to which the results of an innovation are visible to others”. All of these characteristics of an innovation are positively related to the rate of adoption, except for complexity, which is negatively related (Rogers, 2003).

Not only the characteristics of an innovation can influence the rate of adoption, but also other factors, such as the nature of communication channels, nature of the system, the extent of a

change agent's efforts or the type of the innovation decision, which can be optional, collective or authority (Rogers, 2003).

7.3.2.2 Innovativeness and Adopter Categories

Innovativeness is defined as the “degree, to which an individual [...] is relatively earlier in adopting new ideas than other members of a system”. Individuals can be categorised according to their similar degrees of innovativeness into adopter categories. The Figure 37 shows the adopter categories defined by Rogers according to their category size and the time, the individuals in this category adopt an innovation (Rogers, 2003).

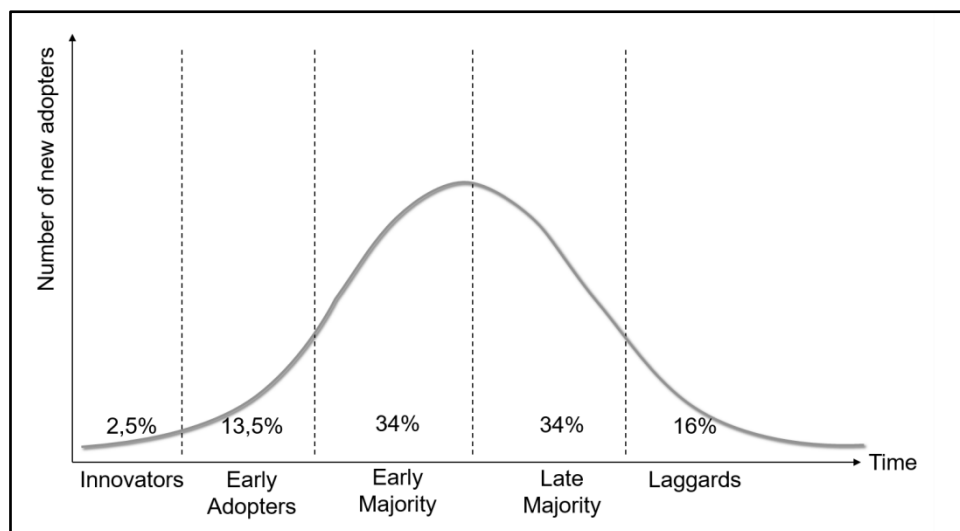


Figure 37 Adoption/Innovation Curve
Source: Rogers (2003)

In the following, the different categories will be described in more detail:

The first category to adopt a new idea is called innovators. People in this group have a high interest in new ideas and are very venturesome. They tend to have more cosmopolite relationships. To be an innovator, one must have the control over substantial financial resources, be able to understand and apply technical knowledge and cope with uncertainty and has to accept possible setbacks. Innovators fulfil an important role as they import the new idea to the system.

The next ones to adopt an innovation are the early adopters. They are usually more integrated into the local social system than innovators and own a high degree of opinion leadership. As they are close to the average adopter, they act as a role model and thus help to get to the critical mass of adopters. They play an important role in decreasing the general uncertainty about an innovation by adopting it themselves.

Following the early adopters, the early majority adopts an innovation, thus adopting just before the average individual does. Individuals belonging to this category are usually not opinion leaders but interact a lot with peers. This category makes about one third of all adopters.

The late majority, again about one third of all adopters, is the next category to adopt an innovation. They adopt an innovation because it is necessary or because of high peer pressure, which means that they only adopt if most of the system already has.

The last ones to adopt are called laggards. They tend to be quite isolated from the social system and are oriented in the past. Laggards are very suspicious of innovations, so they have to be completely sure, that the innovation will not fail before they adopt it (Rogers, 2003).

7.3.2.3 S-Shaped Curve

When we describe the adoption of an innovation over time, the graph will have the shape of an S, presented in Figure 38. Adoption starts slowly, then takes off with a growing community of adopters and later slows down. However, the shape of the curve depends on the type of innovation (Fichman, 1992).

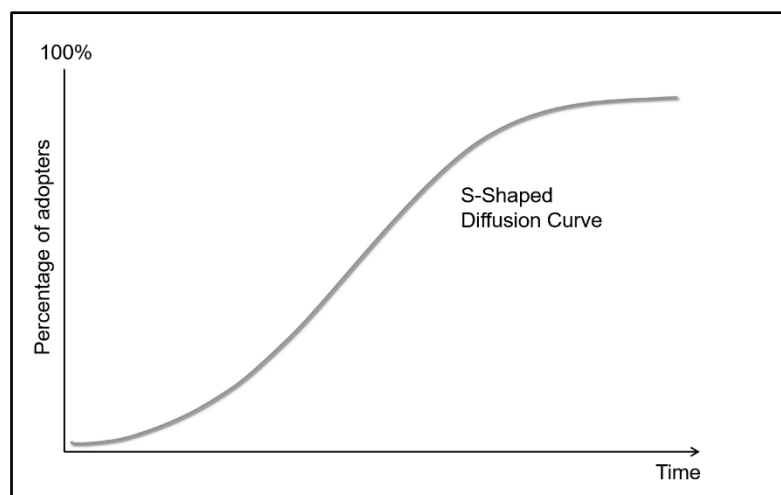


Figure 38 S-Shaped Diffusion Curve
Source: Rogers (2003)

The S-shape occurs because the influence of peers to adopt increases over time. Another reason is the rising knowledge and adoption of the innovation. Individuals who have already adopted hand the innovation to more people. Once about 10-20% have adopted the innovation, it is difficult to stop the diffusion process (Rogers, 2003).

7.3.2.4 Innovation in organizations

As Diffusion Theory is generally more concerned with individual adoption of innovation, it is worth looking at innovation in organizations separately. Generally, larger organizations appear to be more innovative. So-called innovation champions play an important part in turning the adoption into success. A champion is a “charismatic individual who throws his or her support behind an innovation” and thus helps to essentially decrease resistance against a new idea.

The innovation process in organizations can be divided into different stages: the first stage is initiation. Tasks are information gathering, conceptualizing, planning and making the decision whether to adopt or not. During establishing an agenda, a general problem of the organization has to be defined. Then, this problem has to be matched with the innovation by designing and planning. The second phase is implementation, where actual events, actions and decisions take place to implement the innovation. Tasks are restructuring the innovation as well as the system, clarifying the innovation and making the use of the innovation a routine so that it becomes part of the organization's identity (Rogers, 2003). Both are presented in Figure 39.

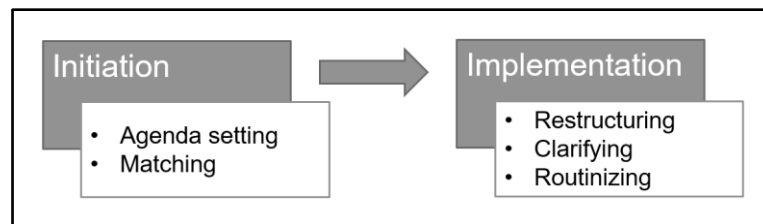


Figure 39 Innovation Process in Organizations

Source: Rogers (2003)

7.3.2.5 Theoretical biases

Important to mention, is that the Theory of Diffusion of Innovation underlies some theoretical biases. First of all, there is a pro-innovation bias, meaning that all adoption is generally seen as good. This also can of course not be the case in certain situations. It is also a general bias, that all adopters make rational decisions and that self-reports are unreliable (Jeyaraj, Rottman, & Lacity, 2006)

7.3.2.6 The Dominant Paradigm and IT Innovation

There is one main paradigm in research about innovation diffusion: "Organisation with more of the "Right Stuff" will exhibit a greater quantity of IT innovation." (Fichman, 2004). As an economic metaphor, this means, that the higher costs are, the slower diffusion takes place, and the higher the perceived profit, the faster the adoption (Attewell, 1992).

This dominant paradigm is based on reality and this perspective of strategic choice is traditionally set in management research, so models based on this paradigm usually work well. However, there is a need for a more innovative approach of studying IT innovation, so new perspectives have come up (Fichman, 2004). Figure 40 shows the different perspectives.

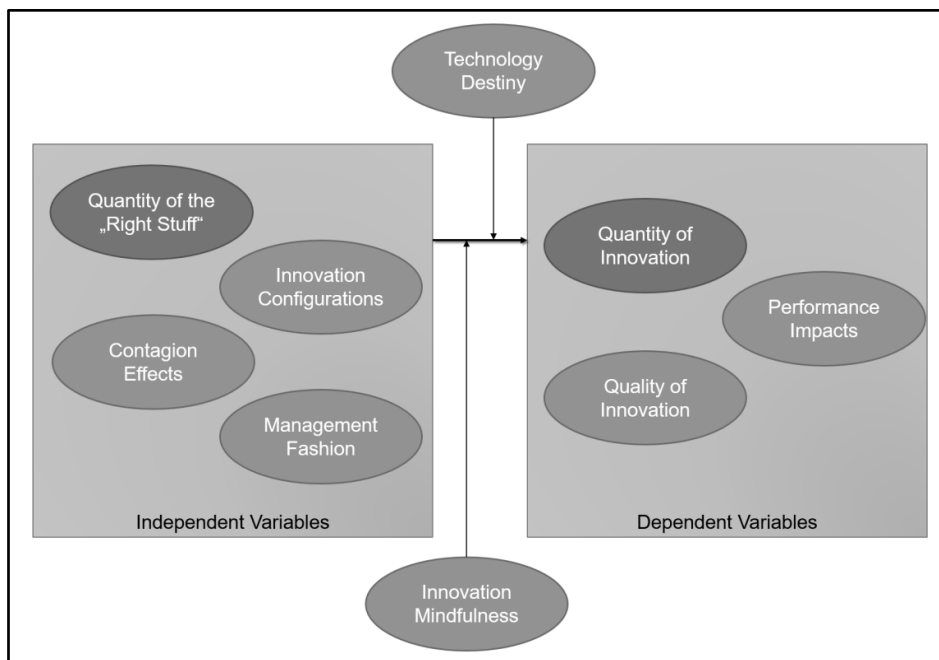


Figure 40 New Perspectives on IT Innovation

Source: Fichman (2004)

These perspectives will be described now:

1. Innovative configuration is a “specific combination of factors that are collectively sufficient to produce a particular innovation-related outcome”.
2. Social contagion appears when organizations are put under pressure to adopt an innovation.
3. Management Fashion waves are widespread general current beliefs.
4. Mindfulness means that an organization has reasons grounded in facts and specifics to innovate.
5. Technology Destiny means that “the ultimate disposition of a technology at the point it is no longer considered to be something new among most members of its target adoption community”.
6. Quality of innovation is the degree to which the “right” innovation has been adopted at the “right” time in the “right” way.
7. Performance impact determines how an innovation contributed to business process, firm level and market-based measures (Fichman, 2004).

Another point to consider in the research of Diffusion Theory has been that there can be complicated adoption scenarios, appearing because of these reasons: managers can have a high influence with their own preferences, opinions on adoption, etc. Another reason could be organizational adoption, where the complexity of interactions and different stages of the adoption process have to be taken into account, or adopter independencies, meaning that the technology can be subject to network externalities. One last reason are knowledge barriers to

adoption, implying that the capability to innovate depends on skills and knowledge (Fichman, 2004).

7.3.2.7 IT Diffusion Framework

The IT diffusion framework is a framework for classifying the IT diffusion research. The two dimensions are class of technology and locus of adoption as shown in Figure 41.

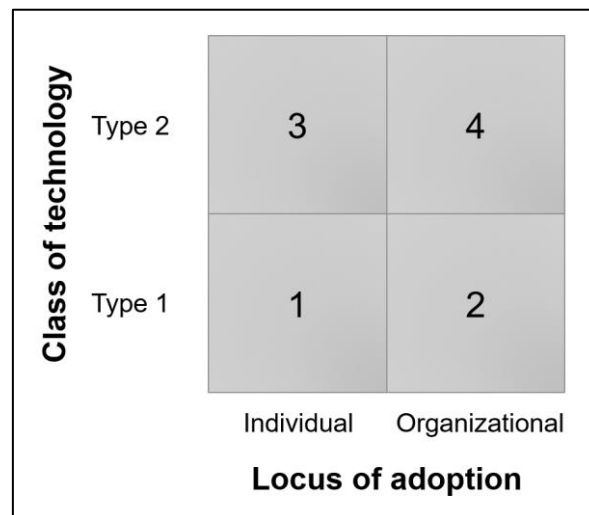


Figure 41 IT Diffusion Framework

Source: Fichman (1992)

The locus of adoption can either be individual, as in single organizations or organizational, as in bigger companies, business units, etc.

Concerning class of adoption, IT diffusion research can either be Type 1, meaning that there is a lack of user interdependencies and of mandatory knowledge burden for adopters-to-be. Type 2 on the other hand is characterized by high knowledge barriers and significant user interdependencies (Fichman, 1992).

This introduction of Diffusion Theory shows, that even if all employees in a company will get the same treatment and have the same trainings in a change process, they will not adopt to an innovation in the same time. Due to different personalities, people in different adopter categories need a different amount of time to adopt. If Change Managers are aware of this fact, they can match their activities during the change process with the different adopter categories, for example by providing different types of trainings. To be able to do this, of course, the adopter categories have to be identified beforehand, which can be very complex, but may be worth the effort.

7.3.3 Technology acceptance models

With technical changes in IT, organizations aim to introduce and roll-out enhanced solutions to individual users, usually familiar with the solution to be replaced. In such a setup, a change project is perceived as successful when users accept and adopt the introduced new solution. However, the actual transition rate can be caused by a complex and eclectic pool of individual

reasons and determinants. Next, we introduce what other theories and models explain the individual acceptance and adoption of information systems and their determinants within the vast body of knowledge on technology acceptance.

We choose to introduce individual determinants of user acceptance by selecting three recognized and prevalent theoretical models from existing technology acceptance models that received strong attention in the past: (1) the “task-technology fit model” (TTFM), proposes a theoretical model with special focus on both, task characteristics and technology characteristics (Goodhue & Thompson, 1995) (2) the “technology acceptance model” (TAM) and its adapted variants (TAM2; TAM3) centres two individual determinants of IT adoption and use: *perceived usefulness* and *perceived ease of use* (Venkatesh et al., 2003; Venkatesh & Bala, 2008); (3) the “unified theory of acceptance and use of technology” (UTAUT) aims to raise understanding about the expected future impact (e.g. *performance expectancy*, *effort expectancy*) of information system *use behaviour* (Fred D. Davis, 1989).

In the following, we give an overview on the structure and the constructs of the TTFM, the TAM and the UTAUT. Thereby we outline the complexity of actual individual acceptance. Furthermore, the introduction of individual acceptance determinants helps to understand and to internalize core constructs and their inherent structure to also help applying them in practice.

7.3.3.1 Task-Technology Fit and Individual Performance

The Technology-to-Performance Chain (Goodhue & Thompson, 1995) depicts under which premises technologies add value to individual performance under certain circumstances. The conceptual framework sets the pattern for emphasizing task related determinants in upcoming technology acceptance models. The framework aims to explain the conception of the causal relation of the outcome variable: “performance impact” of technology use. Here, performance impact is outlined as the processing time of task fulfillment (e.g. individual decision-making performance). The underlying constructs are shortly described in the following and illustrated in Figure 42.

The performance impacts through task-technology fit – the correspondence between functionality and the task requirements of the user – focus on three predictors: task characteristics, technology characteristics and individual characteristics. (a) Tasks are defined as “actions carried out by individuals in turning inputs into outputs”. (b) Technology characteristics are the characteristics of “tools, used by individuals to carry out tasks.” (Goodhue & Thompson, 1995) (c) Finally, individual characteristics like motivation, computer experience and training capture how easily and well users utilize the technology.

Typically, utilization research focuses on individual attitudes, beliefs and behaviors of users e.g. “understand[ing] the users’ behavior of employing the technology in completing tasks” (Goodhue & Thompson, 1995). Utilization is derived from the expected consequences of Utilization. Here, one of the most important predictors is the perceived usefulness (Fred D. Davis, 1989) which will play a central role within the subsequently introduced technology acceptance models like the TAM and the UTAUT. Additionally, social norms, habits and other situational and facilitating factors affect Utilization.

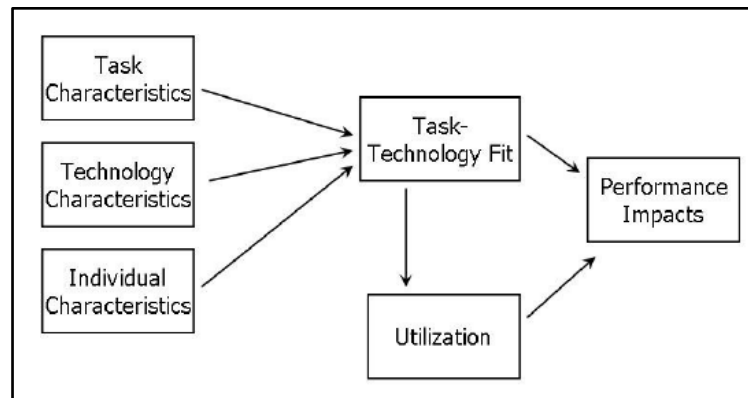


Figure 42 Task-Fit-Technology Model
Source: Goodhue and Thompson (1995)

7.3.3.2 Technology Acceptance Model

The Technology Acceptance Model (TAM) aims to predict the acceptance of new technologies (Fred D Davis, Bagozzi, & Warshaw, 1989). TAM is very well recognized and seen as the foundational theoretical model on which almost all subsequently developed technology acceptance models ground. When introduced in its original version, it already contained the core constructs *perceived usefulness* and *perceived ease of use* which are of primary relevance for technology acceptance behaviours. The TAM is represented in Figure 43.

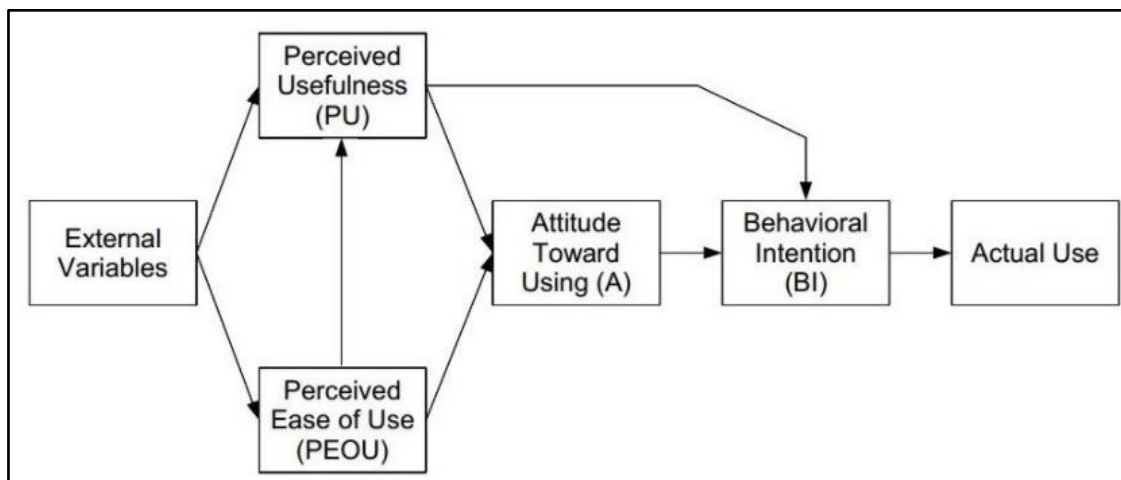


Figure 43 Technology Acceptance Model
Source: Fred D Davis, Bagozzi, and Warshaw (1989)

The determinants of key predictors in TAM are:

1. *Perceived usefulness* is defined as the potential user's subjective valuation that using a specific technology will increase his or her efficiency and performance at work. In other words, *perceived usefulness* is the extent to which a person believes that using information technology will enhance his or her job performance (Venkatesh & Davis, 2000). Further determinants are shown in Figure 44.

2. *Perceived ease of use* expresses the effort level which the potential user expects to be necessary to perform work related tasks with a new technology. In other words, *perceived ease of use*, defines the degree to which a person believes that using an IT will be free of effort (Fred D Davis, Bagozzi, & Warshaw, 1989; Venkatesh, 2000; Venkatesh & Davis, 2000). Further determinants are given in Figure 45.

The latest definition of *perceived usefulness* and *perceived ease of use* was formulated Venkatesh and Bala (2008) who further developed the TAM and introduced its advancements in the TAM2 (Fred D. Davis & Venkatesh, 2004) and the TAM3 (Venkatesh & Bala, 2008).

Determinants	Definitions
Perceived Ease of Use	The degree to which a person believes that using an IT will be free of effort (Davis et al., 1989).
Subjective Norm	The degree to which an individual perceives that most people who are important to him think he should or should not use the system (Fishbein & Ajzen, 1975; Venkatesh & Davis, 2000).
Image	The degree to which an individual perceives that use of an innovation will enhance his or her status in his or her social system (Moore & Benbasat, 1991).
Job Relevance	The degree to which an individual believes that the target system is applicable to his or her job (Venkatesh & Davis, 2000).
Output Quality	The degree to which an individual believes that the system performs his or her job tasks well (Venkatesh & Davis, 2000).
Result Demonstrability	The degree to which an individual believes that the results of using a system are tangible, observable, and communicable (Moore & Benbasat, 1991).

Figure 44 Determinants of Perceived Usefulness

Source: Venkatesh and Bala (2008)

Determinants	Definitions
Computer Self-Efficacy	The degree to which an individual believes that he or she has the ability to perform a specific task/job using the computer (Compeau & Higgins, 1995a, 1995b).
Perception of External Control	The degree to which an individual believes that organizational and technical resources exist to support the use of the system (Venkatesh et al., 2003).
Computer Anxiety	The degree of "an individual's apprehension, or even fear, when she/he is faced with the possibility of using computers" (Venkatesh, 2000, p. 349).
Computer Playfulness	". . .the degree of cognitive spontaneity in microcomputer interactions" (Webster & Martocchio, 1992, p. 204).
Perceived Enjoyment	The extent to which "the activity of using a specific system is perceived to be enjoyable in its own right, aside from any performance consequences resulting from system use" (Venkatesh, 2000, p. 351).
Objective Usability	A "comparison of systems based on the actual level (rather than perceptions) of effort required to completing specific tasks" (Venkatesh, 2000, pp. 350–351).

Figure 45 Determinants of Perceived Ease of Use

Source: Venkatesh and Bala (2008)

The advancements of the TAM3, presented in Figure 46, contain two additional facilitating conditions in form of the moderators: *experience* and *voluntariness*.

1. *Experience* is determined by the existing IT hands-on experience of the prospective user and forms *perceived ease of use* by anchoring *experience* to the users' general computer belief. In turn, *experience* gets adjusted by the users' perception of *ease of use* after actual use of the specific system. *Perceived ease of use* has been theorized to be closely associated with individuals' self-efficacy beliefs and procedural knowledge, which requires hands-on experience and execution of skills (Fred D Davis, Bagozzi, & Warshaw, 1989; Fred D. Davis & Venkatesh, 2004; Venkatesh, 2000; Venkatesh & Davis, 2000).
2. *Voluntariness* is an important contextual variable within the TAM3. It is determined by the users' perception of voluntariness and influenced by different environmental settings: (a) my supervisor does not require me to use a specific technology or system? (b) Are alternative technologies (still) in place that can be used to perform job-related tasks and allow users to bypass a specific system? (c) Although it might be helpful, however, using the system is certainly not required as mandatory by the organization (Fred D Davis, Bagozzi, & Warshaw, 1989; Fred D. Davis & Venkatesh, 2004; Venkatesh, 2000; Venkatesh & Davis, 2000).

After reading through the teaching case presented in section 7.6.2, a closer inspection of the model TAM3 reveals exciting new perspectives and approaches to analyse and explain further aspects of Change Management. One of the most interesting aspects is the determinant *result demonstrability*. Previous research described different added values of ESN use: (a) improved communication across hierarchical and organizational boundaries (DiMicco et al., 2008; Zhang et al., 2010), (b) improved knowledge transfer and expert search (Bughin, 2008; Fulk & Yuan, 2013; Leonardi, 2004; Mansour et al., 2011), (c) enhanced innovative strength (H. M. Hasan & Pfaff, 2006; Leonardi, 2004; Mäntymäki & Riemer, 2014) as well as (d) the establishment and strengthening of social ties (Jackson et al., 2007; Thom-Santelli et al., 2008). Furthermore, it seems logical that knowledge workers should be keen on the best possible access to knowledge to maximize their individual performance, however, positive effects of ESN usage are perceived differently by individuals (Zhang et al., 2010). This underlines the strong need to move “from identifying benefits towards ways of quantifying benefits” of ESN (Williams et al., 2013). Was this aspect addressed well in the case? What could have been done to emphasize it during change?

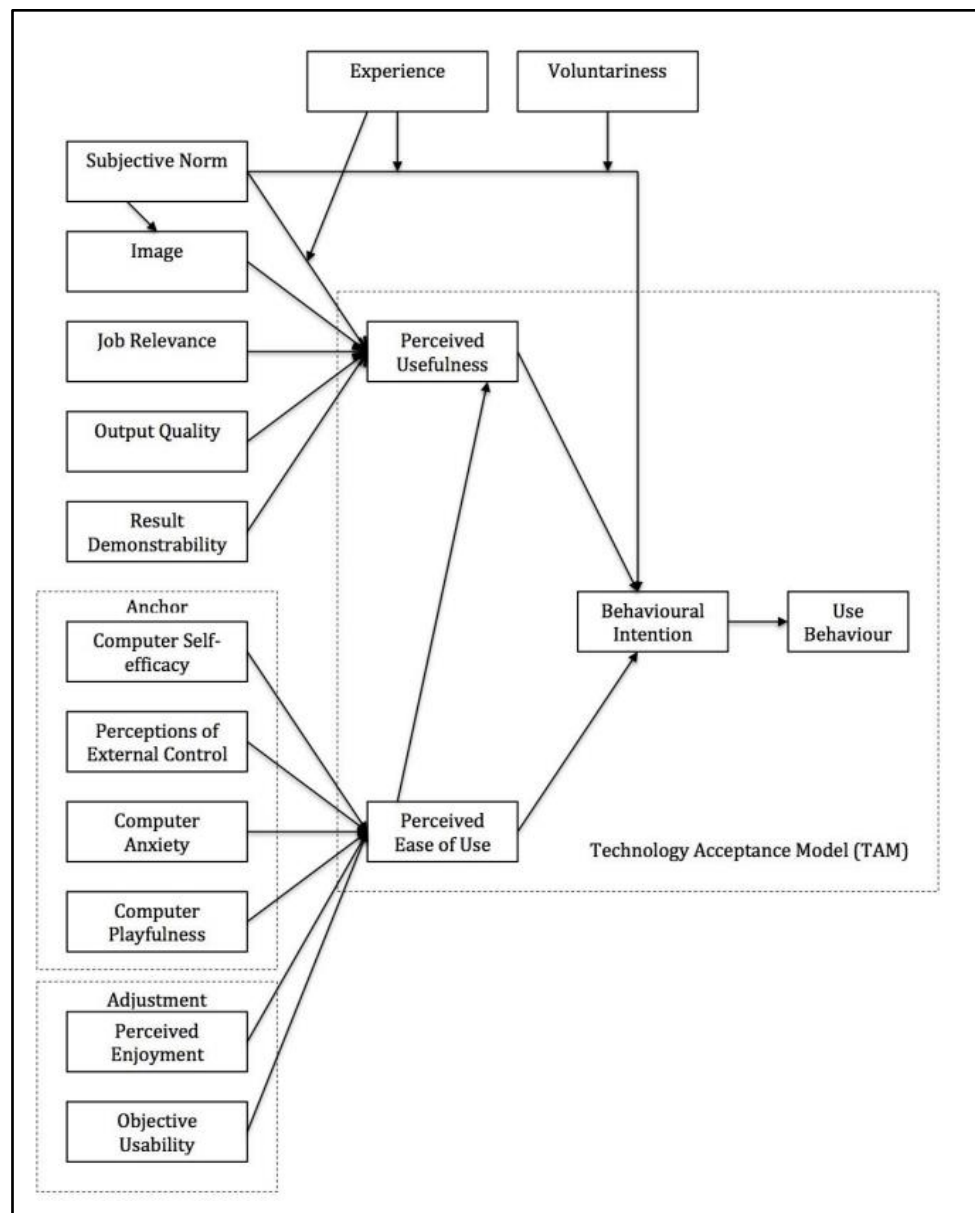


Figure 46 Technology Acceptance Model (TAM3)

Source: Venkatesh et al. (2003), Venkatesh and Bala (2008)

7.3.3.3 Unified Theory of Acceptance and Use of Technology

As already mentioned, technology acceptance research has produced different and often competing models. As each model consists of different predictors of technology acceptance, Venkatesh et al. (2003) crafted a unified model called the Unified Theory of Acceptance and Use of Technology (UTAUT).

The UTAUT is based on the eight most recognized acceptance models at this time illustrated in Figure 47. It was formulated based on the analysis and review of the following models: „Technology Acceptance Model” (TAM), „Theory of Reasoned Action“ (TRA), „Motivational Model” (MM), „Theory of Planned Behavior” (TPB), „Combined TAM-TPB” (TAM+TPB),

„Model of PC Utilization” (MPCU), „Innovation Diffusion Theory” (IDT) and „Social Cognitive Theory” (SCT).

The UTAUT can be classified as interdisciplinary approach in the field of technical acceptance research. It considers both, relevant behavior-oriented and technology-oriented dimensions of extant acceptance models with all their theoretically founded elements.

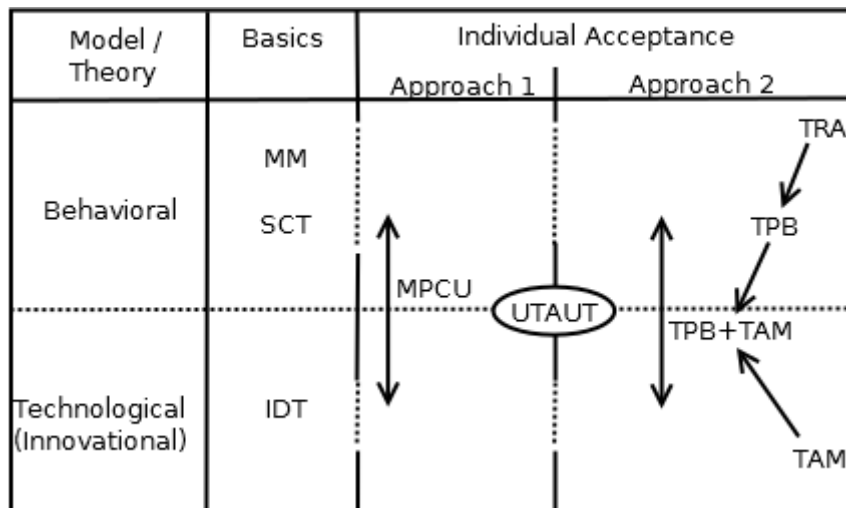


Figure 47 Overview on acceptance models unified in UTAUT

Source: Universität Hildesheim (2017),
URL accessed at 03.08.2017; meanwhile deleted

The following key predictors play a significant role as direct determinants of user acceptance and usage behavior in the UTAUT shown in Figure 48:

1. *Performance expectancy* is defined as the degree to which a prospect user believes that using a technology will help him or her to improve in job performance. The performance expectancy construct is rated as strongest predictor within UTAUT. Performance expectancy, among others, is built-up on *perceived usefulness* from the TAM and *Job-fit* of Thompson et al. (1991) which was fundamental for the task-fit approach in the TTF model.
2. *Effort expectancy* determines the level of effort that is expected to be necessary to use a specific system. Here, low or appropriate effort expectancy positively affects behavioral intention and use behavior. Again, key predictors of extant acceptance models can be found e.g. perceived ease of use from the TAM/TAM2.
3. *Social influence* reflects the level to which an Individual perceives that important others believe he or she should use the new system.
4. *Facilitating conditions* are defined as the degree to which an individual believes that a holistic organizational and technical infrastructure exists to support the use of the system. Here, students should already be familiar with the predictor *compatibility* from the innovation diffusion theory which is one of the key elements of the facilitating conditions.

The variables gender, age, experience and voluntariness of use moderate the effects of the UTAUT key predictors.

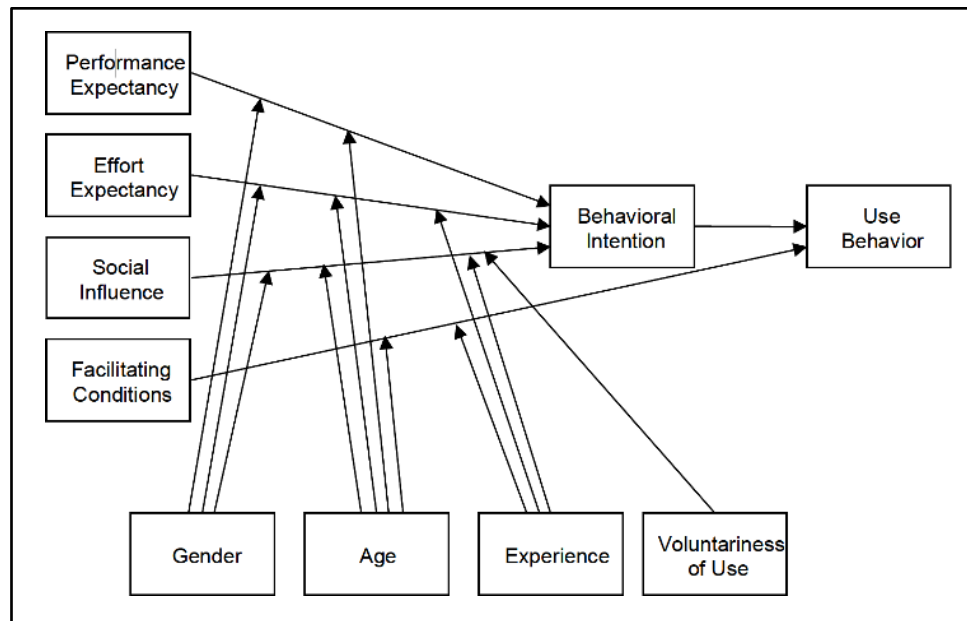


Figure 48 Unified Theory of Acceptance and Use of Technology (UTAUT)
Source: Venkatesh et al. (2003)

Altogether, the UTAUT aims to provide a practical framework for managers in charge to understand and predict the likelihood of implementation success for new technologies. It is intended to empower managers to understand and address the relevant drivers of acceptance in technical change projects. In addition, the synthesized predictors and determinants guide managers to prepare measures and interventions to intervene acceptance and adoption resistance of prospective users (Venkatesh et al., 2003).

7.4 Developing a framework of successful change management

This chapter presents theoretical background material that has been jointly developed with the co-authors of the following article, presented in chapter 7.6.2:

Oettl, C. A., Beck, K., Rauffer, F. M., Priglmeir, A. T., Böhm, M., & Krcmar, H. (2018). Zero Email initiative: a critical review of Change Management during the introduction of Enterprise Social Networks. Journal of Information Technology Teaching Cases, 8(2), 172–183.

This theoretical background material presented here is not published with the aforementioned article.

7.4.1 Introduction

Change needs to be planned in detail to ensure its success. Giving an overview, the structural comparison in Table 36 shows differences and similarities of described Change Management models introduced in chapter 7.3.1. There is no “perfect” way of structuring a change process, but each model splits the change process into several smaller steps to reduce the complexity.

Structural aspects	Lewin	Kotter	Watzlawick	Atos' Lifecycle	Cummings & Worley	Lippitt	ADKAR
Stages	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Stages	3	8	4	5	4	7	5
Linear or cyclic	Linear	Linear	Not defined	Cyclic	both	Linear/Cyclic	Linear
Blurred transitions	No	Partly	No	No	No	Partly	No
Possibility of jumping/regressions	No	No	No	Not defined	Not defined	Yes	No
Period of change process	Not defined	Not defined	Not defined	Not defined	Not defined	Not defined	Not defined
(Well-) defined tasks	Yes	Partly	Yes	Yes	Partly	Partly	Yes
Number of tasks per stage	3-4	Not defined	1	4-6	Not defined	Not defined	Not defined
Number of overall tasks	10	Not defined	4	26	Not defined	Not defined	Not defined

Table 36 Comparison of structure of the described change management models

Source: Own illustration

7.4.2 Method

In order to create a valid checklist, the content of each of the seven theories described above was also analyzed in detail to extract all elements that the theory conveys. All important steps within each Change Management model were selected from the individual models and compared with each other presented in Table 37. Depending on the number of mentions, a step was included into the final checklist: steps that were mentioned in at least 4 different Change Management models were included, steps which were mentioned in less than 4 models were excluded from the list. Additionally, the steps which deal with similar topics were merged in order to avoid repetition and create a list which is easy to apply. All twelve Change Management steps included in the final list are important and mandatory in order to successfully conduct a Change Management process. Based on the authors' experience, especially gained from in depth expert interviews (n=7) with people who were involved in the ESN change processes in leading positions, four additional criteria were added to the checklist. We outline the underlying interview guide in *Appendix – Study 5* in chapter 10.4.2. These points have a high value for successful Change Management when implementing ESNs and thus need to be emphasized, although the selection of theoretical change models contains them less than four times. In Figure 49, they are mentioned as “additional points”.

	Content-related aspects	Lewin	Kotter	Watzlawick	Atos' Lifecycle	Cummings & Worley	Lippit	ADKAR	Number of mentions
1	Establishing a sense of urgency/awareness	x	x		x	x	x	x	6
2	Identifying frame conditions (in-/external factors)	x		x	x	x	x	x	6
3	Ensure attention for the change	x	x		x	x	x	x	6
4	Implementation	x		x	x	x	x	x	6
5	Emphasis on feedback on progress	x	x		x	x	x	x	6
6	Identifying crisis and opportunities	x	x	x		x		x	5
7	Developing a vision	x	x	x	x	x			5
8	Communicating the change	x	x		x		x	x	5
9	Communicating advantages and feasibility	x	x		x		x	x	5
10	Education: knowledge, skills, information access	x	x		x		x	x	5
11	Changing systems or structures	x	x	x		x	x		5
12	Nurturing change process	x	x		x	x		x	5
13	Leading by example	x	x			x	x	x	5
14	Examining the current market	x	x			x		x	4
15	Developing a master plan (milestones, ...)			x	x	x	x		4
16	Strategy for achieving the vision		x	x	x	x			4
17	Empowering people, issue ownership (employees)	x	x				x	x	4
18	Finding Change Agents (internal or external), coaching		x			x	x	x	4
19	Mental and financial support of organization	x	x			x		x	4
20	Ongoing training and communication				x	x	x	x	4
21	Rewarding people creating "wins"	x	x				x	x	4
22	Anchoring new approaches in culture	x	x			x	x		4
23	Consider resources being committed				x	x	x		3
24	Using all communication channels		x		x			x	3
25	Appliance of new methods/techniques	x				x	x		3
26	Celebrating successes	x	x					x	3
27	Continuous learning				x	x		x	3
28	Identifying and developing promoters fitting the vision		x				x		2
29	Guiding coalition team building		x				x		2
30	Communicating the vision	x	x						2
31	Experimenting / pilot projects				x		x		2
32	Appraisal of past and former methods		x	x					2
33	Getting rid of obstacles		x				x		2
34	Consider (different) strategies for different groups					x	x		2
35	Evaluation of indicators/observation methods for change			x			x		2
36	Not denying mistakes and success	x						x	2
37	Creating understanding of failures/successes	x				x			2
38	Special program must become daily routine	x	x						2
39	Determine whether standards have changed					x	x		2
40	Creating the desire for change						x	x	2
41	Develop appropriate and agreed timescale						x		1
42	Forcing people to change their behavior	x							1
43	Determining priorities of change project			x					1
44	Encouraging risk taking		x						1
45	Generating short-term wins		x						1
46	Integration of succeeding avenues of approach		x						1

Table 37 Comparison of content of the seven described change management models
Source: Own illustration

7.4.3 Results

Therefore, the “Checklist for successful change”, shown in Figure 49, consists of twelve important steps that need to be conducted when carrying out a Change Management process. Four additional steps should also be considered as they are equally important.

<p>CHECKLIST</p> <p><i>Criteria for successful change</i></p> <ul style="list-style-type: none"><input checked="" type="checkbox"/> Examining the environment<input checked="" type="checkbox"/> Developing a vision<input checked="" type="checkbox"/> Strategy plan<input checked="" type="checkbox"/> Sense of urgency<input checked="" type="checkbox"/> Communication<input checked="" type="checkbox"/> Promoting<input checked="" type="checkbox"/> Training<input checked="" type="checkbox"/> Execution<input checked="" type="checkbox"/> Organizational support<input checked="" type="checkbox"/> Feedback on progress<input checked="" type="checkbox"/> Nurturing change process<input checked="" type="checkbox"/> Anchoring new approaches in culture <p><i>Additional points</i></p> <ul style="list-style-type: none"><input checked="" type="checkbox"/> Appraisal of past and former methods<input checked="" type="checkbox"/> Consider (different) change strategies for different groups of people<input checked="" type="checkbox"/> Identifying and developing promoters fitting the vision<input checked="" type="checkbox"/> Experimenting / Pilot projects / Proof of concept

Figure 49 Checklist for successful change

Source: Summary based on Table 37 – Own illustration

Examining the environment:

Before taking action, the environment in which the change is going to take place must be thoroughly examined. This includes examining internal and external factors (current market) that may impact the change process in order to identify crisis and opportunities. Legitimate decisions and plans can only be developed once enough knowledge about the current circumstances is gained.

Developing a vision:

Having a clear picture of the change is vital for guiding the transformation process effectively. Visions help clarify the general change direction, coordinate change actions and motivate people as they are easily adaptable.

Strategy plan:

Based on the examination of the environment and the vision developed, a strategy plan needs to be developed, containing relevant milestones and concrete steps for achieving successful change.

Sense of urgency:

To ensure the employees attention for change, a sense of urgency must be established. The attention for the change can be ensured by showing the severity of the current situation and the urgency for change.

Communication:

Communicating the change plan and vision to everybody affected by the process is very important, as people need to understand the overall picture in order to be willing to adapt to the change. Benefits and feasibility should be communicated through as many channels as possible. Responding to feedback and concerns is also an important part of communication.

Promoting:

Promoting change can happen in different ways. Either through explicit internal or external Change Agents, or through leading by example, meaning that the management acts as a role model by actively following the change it wants to achieve. Both ways are very helpful to successfully manage change.

Training:

To ensure that employees can successfully adapt to a change it is necessary to teach them new knowledge and skills concerning the change and provide access to information, for example by performing trainings. It is essential for the change process to continue to train employees through the whole process.

Execution:

An existential step in any Change Management process is to actually implement the change, meaning changing one or more systems or structures undermining the change vision. This should happen while following an action plan including for example a timetable and role definitions.

Organizational support:

Mental and financial support from the organization, such as increasing remuneration or better recognition, is important to strengthen the employee's willingness to and commitment for the change. Also, to reward people creating "wins" is a positive incentive to stay tuned with the change. Another fundamental point is to empower the people so that they develop an issue ownership to discover personal advantages.

Feedback on progress:

Highly important for a working Change Management process is ongoing feedback from the employees relating problems during the change, uncertainty concerning the change item or other factors, which could influence the whole change process. The organization should ensure appropriate channels to collect people's feedback.

Nurturing change process:

The organization has to nurture the process by analyzing the actual situation with employee's feedback and applying learnings out of it, so that the change never gets stuck. An ongoing and continuously improved process would be desirable.

Anchoring new approaches in culture:

As corporate culture is essential for organizational success, change issues and new approaches should be introduced and consolidated. A change in behavior and shared values mostly accompanies an organizational change. To achieve new norms and rules replacing the old thinking, communication and support must be increased.

Appraisal of past and former methods:

Respecting former methods, traditions and decisions is important for gaining the employees' trust when it comes to the new change.

Consider (different) change strategies for different groups of people:

There are different groups of people in an organization, such as rational people, people, who obey instructions of higher authorities or people, who can easily be trained and educated. Within a Change Management process, broad strategies for all different personas and learning types must be considered for effective implementation of the change.

Identifying and developing promoters fitting the vision:

To find employees (early adopters), who actively support and promote the vision behind the change and engage other people, is a major point in Change Management for the organization. People tend rather to follow colleagues who come from their own job level than the top management. Therefore, identifying and developing as many enthusiastic pioneers as possible is proven as highly important during a change process.

Experimenting / Pilot projects / Proof of concept:

Testing theories before implementing them on a broad scale is important to eliminate faults and prevent total failure. Gaining trust in the early stages of adoption can only be achieved if all elements function correctly.

7.4.4 Discussion

Even if all these criteria on the checklist for successful Change Management are considered during a change process, the change can still fail. This can have many reasons, but one way to explain possible obstacles or failures during the change process could be the Theory of Diffusion of Innovations or other technology acceptance models, we introduced in the sections 7.3.2 and 7.3.3.

7.4.5 Conclusion

Theoretical models are introduced to provide a good guideline for companies when performing large change projects. However, we found that practice does not strictly follow any of these theoretical models. The interview data gives strong support to this as nowadays organizational structures are more flexible and organizations therefore avoid applying theory “out of the box”. Theoretical approaches are perceived as too rigid for vivid organizations. Organizations rather prefer planning and conducting changes based on lessons learned from past change projects. By doing so, organizations perceive their organizational situation and environment reflected appropriately. One critical aspect of this approach is that knowledge about past projects often depends on the people involved in it and a proper documentation.

Based on the results of this study, we suggest planning and conducting technical transitions towards ESNs based on (1) the *ESN framework of successful change management* and (2) predicting variables of innovation diffusion theory and technology acceptance theory. This profound and novel approach helps organizations to design robust change management concepts based on a clear structure and applicable purposive interventions. Based on this work, we next develop an instrument to manage change associated with the implementation of ESNs by additionally reflecting the archetypical differences of ESN users we introduce in chapter 4 *The adoption and diffusion of ESNs*.

7.5 Developing an instrument to manage change associated with the implementation of ESNs

The work in this section is designed to create interventions that address archetypes of ESN users during organizational change associated to the implementation of ESNs. Prior studies have noted the importance of organizational change (e.g. evolutionary and revolutionary change) which is dealt with in different ways (G. Jones, 2010). Overall, changes become almost a daily occurrence and the power to change developed as a measure of the success of a company (Beer & Nohria, 2000). However, very little is known about how change management theories aid the implementation of ESNs yet.

Here, the *ESN change framework* we present in Figure 49, offers promising areas and approaches of how to mitigate ESN adoption issues. To purposefully advance these general

ESN related interventions, it is reasonable to further emphasize and adjust them according to the different characteristics of archetypes of ESN users. With its drivers and barriers of ESN utilization intensity, the *model of archetypes of ESN users* we present in chapter 4 *The adoption and diffusion of ESNs* provides multifaceted starting points based on which we introduce archetype-specific interventions.

The literature review process on change management in section 7.3.1 has highlighted seven relevant theories. This core literature on change management was analyzed, validated and merged to a checklist of successful change management. The checklist of successful change management covers areas of change management that specifically address ESN adoption issues (see Figure 49). We, next, introduce the well-established model of interventions for activating sustainable motivation (MSM) (Mertins, Heisig, & Vorbeck, 2003), structure the identified sixteen areas of successful change management based on the areas of the MSM and thus provide an instrument to manage organizational change associated with ESNs.

7.5.1 The IPK model of intervention for activating sustainable motivation

Successful change management requires promoting the intrinsic motivation of employees. Here, the “Fraunhofer Institut für Produktionsanlagen und Konstruktionstechnik” (IPK) provides the *Model of Intervention for Activating Sustainable Motivation* (MSM) (see Figure 50) that divides change management interventions into four different motivation-related factors, namely *sensibility*, *ability*, *liability* and *commitment* (Mertins et al., 2003).

The factor *sensibility* comprises interventions that aim to create transparency and comprehensively inform employees. The factor *ability* comprises interventions that aim to enable employees to change their behavior through the promotion of required competencies. The factor *liability* comprises interventions that aim to assert formal requirements and objectives of the change. The factor *commitment* comprises interventions that aim to involve employees and give them the chance to create good experiences resulting from the change process. The factor *latent barriers and drivers* comprises interventions that aim to stabilize an organization in three areas, namely culture, tasks and IT-systems.

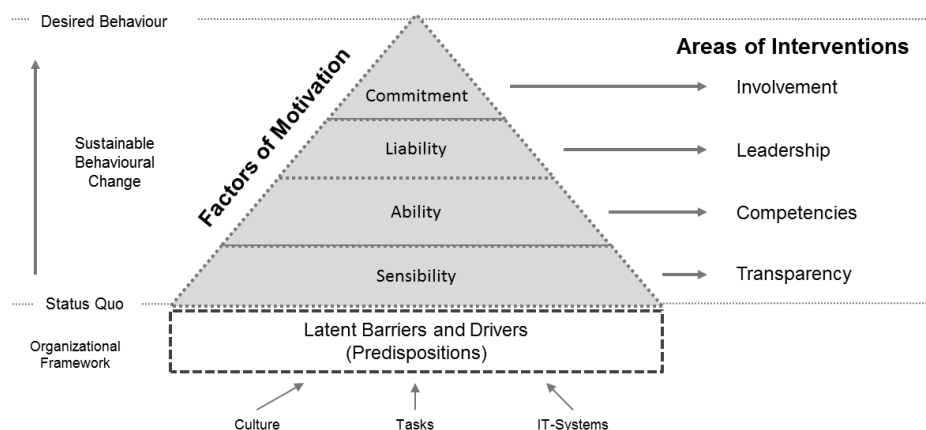


Figure 50 IPK Model – Intervention for Activating Sustainable Motivation

Source : Mertins et al. (2003) – Own illustration

7.5.2 Developing an ESN change framework

Within this section we structure the identified sixteen areas of successful change management we developed in section 7.4 based on the areas of the MSM.

7.5.2.1 Commitment through involvement

The acceptance and personal commitment of employees requires their active involvement in the process of change. Thereby, “bottom-up” interventions help employees to have a positive experience in the new environment or to profit from the experiences had by other colleagues. We present interventions classified in the area of *involvement* in Table 38.

Commitment through Involvement	Definition	Source
Identifying and developing promoters fitting the vision	To find employees (early adopters), who actively support and promote the vision behind the change and engage other people, is a major point in Change Management for the organization. People tend rather to follow colleagues who come from their own job level than the top management. Therefore, identifying and developing as many enthusiastic pioneers as possible is proven as highly important during a change process.	Kotter, 1996; Lippitt et al., 1958
Feedback on progress	Highly important for a working Change Management process is ongoing feedback from the employees relating problems during the change, uncertainty concerning the change item or other factors, which could influence the whole change process. The organization should ensure appropriate channels to collect people's feedback.	Atos, 2012a; Cummings & Worley, 2009; Kotter, 1996; Lewin, 1947; Lippitt et al., 1958; Prosci, 2017
Nurturing change process	The organization has to nurture the process by analyzing the actual situation with employee's feedback and applying learnings out of it, so that the change never gets stuck. An ongoing and continuously improved process would be desirable.	Atos, 2012a; Cummings & Worley, 2009; Kotter, 1996; Lewin, 1947; Lippitt et al., 1958; Prosci, 2017
Appraisal of past and former methods	Respecting former methods, traditions and decisions is important for gaining the employees' trust when it comes to the new change.	Kotter, 1996; Watzlawick et al., 1974

Table 38 Area of intervention: Involvement
Source: Own illustration

7.5.2.2 Liability through leadership

Managerial tools are intended to assist employees to fulfill duties and objectives relating to behavioral change. In this context, expectations need to be clear while the leadership team needs to also act as an agent for change. Change agents help to reveal a particular problem, and in this way induce a desire for change (Lippitt et al., 1958). Through subsequent empowerment of employees, managers have the opportunity to create major initiatives aimed at building trust among employees. Below, in Table 39, we present different interventions relating to *leadership*.

Liability through Leadership	Definition	Source
Identifying and Developing a vision	Having a clear picture of the change is vital for guiding the transformation process effectively. Visions help clarify the general change direction, coordinate change actions and motivate people as they are easily adaptable.	Atos, 2012a; Cummings & Worley, 2009; Kotter, 1996; Lewin, 1947; Watzlawick et al., 1974
Strategy plan	Based on the examination of the environment and the vision developed, a strategy plan needs to be developed, containing relevant milestones and concrete steps for achieving successful change.	Atos, 2012a; Cummings & Worley, 2009; Kotter, 1996;

		Lippitt et al., 1958; Watzlawick et al., 1974
Sense of urgency	To ensure the employees attention for change, a sense of urgency must be established. The attention for the change can be ensured by showing the severity of the current situation and the urgency for change.	Atos, 2012a; Cummings & Worley, 2009; Kotter, 1996; Lewin, 1947; Lippitt et al., 1958; Prosci, 2017
Consider different strategies for different people	There are different groups of people in an organization, such as rational people, people, who obey instructions of higher authorities or people, who can easily be trained and educated. Within a Change Management process, broad strategies for all different personas and learning types must be considered for effective implementation of the change.	Cummings & Worley, 2009; Lippitt et al., 1958
Promoting	Promoting change can happen in different ways. Either through explicit internal or external Change Agents, or through leading by example, meaning that the management acts as a role model by actively following the change it wants to achieve. Both ways are very helpful to successfully manage change.	Atos, 2012a; Cummings & Worley, 2009; Kotter, 1996; Lewin, 1947; Lippitt et al., 1958; Prosci, 2017
Execution	An existential step in any Change Management process is to actually implement the change, meaning changing one or more systems or structures undermining the change vision. This should happen while following an action plan including for example a timetable and role definitions.	Atos, 2012a; Cummings & Worley, 2009; Kotter, 1996; Lewin, 1947; Lippitt et al., 1958; Prosci, 2017; Watzlawick et al., 1974

Table 39 Area of intervention: Leadership

Source: Own illustration

7.5.2.3 Ability through competencies

Competencies and training are highlighted as important success factors within the change process. Core literature supports the notion that the continued motivation of employees to head towards change requires specific strategies in learning methods and processes. The actual working processes should be used to promote competencies as application-oriented learning methods are known to be more profitable than other traditional forms of job training. Below, in Table 40, we present different interventions relating to *competencies*.

Ability through competencies	Definition	Source
Training	To ensure that employees can successfully adapt to a change it is necessary to teach them new knowledge and skills concerning the change and provide access to information, for example by performing trainings or easily accessible change agents. It is essential for the change process to continue to train employees through the whole process.	Atos, 2012a; Cummings & Worley, 2009; Kotter, 1996; Lewin, 1947; Lippitt et al., 1958; Prosci, 2017

Table 40 Area of intervention: Competencies

Source: Own illustration

7.5.2.4 Sensibility through transparency

Theory outlines that a comprehensive and plausible information process is important to clearly communicate reasons, objectives the usefulness of the technical transformation towards ENSs. In this context, communication is seen as a prerequisite for the acceptance and personal commitment of employees. The employees need to be aware of and agree with the usefulness of the intended change. Below, in Table 41, we present interventions relating to *transparency*.

Sensibility through transparency	Definition	Source
Communication	Communicating the change plan and vision to everybody affected by the process is very important, as people need to understand the overall picture in order to be willing to adapt to the change. Benefits and feasibility should be communicated through as many channels as possible. Responding to feedback and concerns is also an important part of communication.	Atos, 2012a; Kotter, 1996; Lewin, 1947; Lippitt et al., 1958; Prosci, 2017

Table 41 **Area of intervention: Transparency**
Source: Own illustration

7.5.2.5 Latent barriers and drivers – culture, tasks and tools

The theory provides evidence that the acceptance and personal commitment of employees highly depends on the corporate culture, with its core processes and tasks. The present structure of an employee's working environment, personal tasks and the IT system employed in the company has influenced the employee's working methods and behavior over a particular period of time. Here, the change program is required to soundly reflect and address the employee's organizational frame conditions, corporate culture, business processes and tasks. We present interventions classified in the area of *latent barriers and drivers - Culture, Task and Tools* in Table 42.

Latent barriers and drivers: Culture-Tasks-Tools	Definition	Source
Examining the environment	Before taking action, the environment in which the change is going to take place must be thoroughly examined. This includes examining internal and external factors (current market) that may impact the change process in order to identify crisis and opportunities. Legitimate decisions and plans can only be developed once enough knowledge about the current circumstances is gained.	Atos, 2012a; Cummings & Worley, 2009; Kotter, 1996; Lewin, 1947; Lippitt et al., 1958; Prosci, 2017; Watzlawick et al., 1974
Organizational support	Mental and financial support from the organization, such as increasing remuneration or better recognition, is important to strengthen the employee's willingness to and commitment for the change. Also, to reward people creating "wins" is a positive incentive to stay tuned with the change. Another fundamental point is to empower the people so that they develop an issue ownership to discover personal advantages.	Cummings & Worley, 2009; Kotter, 1996; Lewin, 1947; Lippitt et al., 1958; Prosci, 2017
Experimenting / Pilot projects / Proof of concept	Testing theories before implementing them on a broad scale is important to eliminate faults and prevent total failure. Gaining trust in the early stages of adoption can only be achieved if all elements function correctly.	Atos, 2012a; Lippitt et al., 1958
Anchoring new approaches in culture	As corporate culture is essential for organizational success, change issues and new approaches should be introduced and consolidated. A change in behavior and shared values mostly accompanies an organizational change. To achieve new norms and rules replacing the old thinking, communication and support must be increased.	Cummings & Worley, 2009; Kotter, 1996; Lewin, 1947; Lippitt et al., 1958

Table 42 **Area of intervention: Culture, Task and Tools**
Source: Own illustration

7.5.3 Change interventions for archetypes of ESN users

This section provides an instrument to manage organizational change associated with ESNs. Thereby the identified archetypes of ESN users are addressed.

To reduce complexity and increase applicability, we discuss archetype-specific interventions based on two premises: (1) We determine general *focus points* by considering interventions from a managerial perspective and (2) we prioritize interventions according to their *necessity level to get adjusted* to meaningfully address different archetypes.

First, we chose to derive and discuss interventions from a managerial perspective to strengthen their applicability. As a result, it is reasonable to first synthesize general focus points, where archetype-specific treatment of interventions pays off. To identify those focus points, we look at the ESN change framework from two different perspectives: dimension (task-fit vs. openness to ESNs) and scope (develop vs. stabilize).

While *dimension* considers the level of task-fit and openness to ESNs of the different archetypes from the model of archetypes of ESN users, *scope* helps to better understand and distinguish how to (a) create movement to develop users and (b) stabilize the environment of archetypes so as to prevent them from falling back into their old behavioral patterns.

This granularity forces managers to first analyze and understand their situation and to define what they want to achieve. In turn, it provides structure and helps to quickly select appropriate archetype-specific interventions for a specific problem. As an example, hidden champions are characterized by a high openness to ESNs and a medium task-fit. Therefore, it is necessary to address them with measures that aim to stabilize the high openness to ESNs (major focus point) and to develop and stabilize the medium task-fit (medium focus points). Furthermore, there are areas where it is not applicable to focus on, e.g. to stabilize a not existing high openness to ESNs of reluctant users. General focus points are presented in Table 43. Major focus points are labeled with filled stars and medium focus points are labeled with half-filled stars.

Scope	Dimensions	Archetypes					
		Reluctant User	Repudiator	Question Mark	Limited User	Hidden Champion	Power User
develop	task fit	-	☆	☆	☆	☆	-
	openness to ESNs	☆	☆	☆	☆	-	-
stabilize	task fit	☆	-	-	-	☆	☆
	openness to ESNs	-	-	☆	☆	☆	☆

major focus point ☆ medium focus point ☆ not applicable -

Table 43 General focus points for identified archetypes of ESN users

Source: Own illustration

Second, to further increase applicability, we prioritize the interventions of the ESN change framework according to their necessity to get adjusted to the characteristics of the specific archetypes (Tables 39-43). We suggest identifying three *necessity levels* in order to indicate

their relevance, namely *high need for adjustment*, *medium need for adjustment* and *no need for adjustment*.

Interventions with a high need for adjustment specifically pay off when adjusted or emphasized according to the archetype-specific characteristics of ESN users (e.g. *appraisal of past and former methods*: Here, interventions need to be adjusted and emphasized to reach archetypes still using past and former methods, e.g. reluctant users that are characterized with a low openness to ESNs). Interventions with a high necessity level to be adjusted to a specific archetype are identified by a filled circle.

Half-filled circles identify interventions with medium or indirect potential to positively affect the change outcome (e.g. *sense of urgency*: This intervention might not be specifically relevant for archetypes characterized with a high openness to ESNs. However, power users could be enabled to indirectly convey the *sense of urgency* towards archetypes with low openness to ESNs).

Interventions with no need for adjustment are *as important as* interventions with high or medium need for adjustment. However, interventions with no need for adjustment do not justify the efforts adjusting them to characteristics of different archetypes (e.g. *developing a vision*, as a vision is a unique statement to channel and guide all organizational decisions and efforts towards a specific goal). Interventions with no need for adjustment level are identified by an unfilled circle.

Based on the *ESN change framework* (Figure 49), the *general focus points* (Table 43) and interventions' *need to be adjusted*, (Tables 39-43) we, next, derive and discuss an exemplary set of measures relevant to address different archetypes of ESN users during technical transformations towards ESNs. We recommend practice to mandatorily adjust and implement interventions with major need for adjustment (filled circle) and according to time and budget optionally adjust and implement interventions with medium need for adjustment (half-filled circles). Interventions with no need for adjustment are not further discussed. For details, we refer back to the original sources and the theoretical background section.

The intervention *consider different strategies for different people* (Table 39) is subsequently identified as standard intervention as it is equally relevant for all archetypes. However, its membership within the ESN change framework itself is remarkable as it gives strong support for the need to adjust interventions according to the different archetypes.

7.5.3.1 Commitment through involvement – archetypical differences

High Need for Adjustment

Identifying and developing promoters fitting the vision: The leadership team motivates and selects power users to become promoters. Promoters specifically encourage and help reluctant users to experience individual benefits based on their high task-fit. In this context, promoters motivate reluctant users to become a “2nd generation” of promoters which then could establish access to other reluctant users more easily as they can

authentically report on how and why they developed towards a higher openness to ESNs (e.g. by experiencing individual benefits).

Feedback on progress: Promoters approach limited users and hidden champions to understand barriers of task-fit (e.g. work duplication) and create solutions (e.g. through process reengineering) to develop task-fit. Promoters gather feedback from reluctant users and manage its processing. To convey the importance of the feedback from reluctant users, it is necessary to thoroughly react to it. Promoters approach reluctant users mainly in face to face situations like workshops or lesson-learned sessions or by just walking into their offices. This natural way of communication avoids giving weight to former and past methods (e.g. email) and avoids forcing reluctant users to use ESNs although they do have a low openness to them.

Appraisal of past and former methods: Reluctant users and repudiators prefer non-ESN systems to get their work done. Promoters as well as the leadership team need to talk with respect about past and former methods. Everyone in the change process needs to understand that the employees “grew up” with an information landscape the organization wants to replace by an ESN. Build trust by understanding and highlighting the advantages of former information systems and also clearly work out tangible benefits of ESN use and thereby justify the implementation of ESNs.

Medium Need for Adjustment:

Identifying and developing promoters fitting the vision: Promoters facilitate the social interaction with hidden champions and limited users and monitor their potential to become promoters.

Feedback on progress: Different archetypes can choose from different feedback channels to report problems during the change. Promoters as well as the leadership team actively gather feedback from archetypes with a low or medium openness to ESNs in face to face situations. Promoters as well as the leadership team actively collect feedback from archetypes with a low or medium task-fit in technical workshops and process assessment sessions to generate ideas about how to develop their task-fit. Promoters as well as the leadership team appreciate feedback and thoroughly respond to it by either implementing it or by giving an explanation why a feedback cannot be implemented. A promoter as well as the leadership team tries to get and stay in a dialogue with feedback providers and does not only decide on or judge the feedback. A promoter as well as the leadership team uses feedback of users to start a continuous conversation.

Factors of Motivation & Areas of Intervention		Reluctant User	Repudiator	Question Mark	Limited User	Hidden Champion	Power User
(1) Commitment through Involvement							
Identifying and developing promoters fitting the vision	To find employees (early adopters), who actively support and promote the vision behind the change and engage other people, is a major point in Change Management for the organization. People tend rather to follow colleagues who come from their own job level than the top management. Therefore, identifying and developing as many enthusiastic pioneers as possible is proven as highly important during a change process.	●	○	○	◐	◑	●
Feedback on progress	Highly important for a working Change Management process is ongoing feedback from the employees relating problems during the change, uncertainty concerning the change item or other factors, which could influence the whole change process. The organization should ensure appropriate channels to collect people's feedback.	●	◐	◑	◑	◑	●
Nurturing change process	The organization has to nurture the process by analyzing the actual situation with employee's feedback and applying learnings out of it, so that the change never gets stuck. An ongoing and continuously improved process would be desirable.	○	○	○	○	○	○
Appraisal of past and former methods	Respecting former methods, traditions and decisions is important for gaining the employees' trust when it comes to the new change.	●	●	○	○	○	○

high necessity level ●
 medium necessity level ◐
 standard intervention ○

Table 44 Commitment through involvement – archetypical differences
 Source: Own illustration

7.5.3.2 Liability through leadership – archetypical differences

High Need for Adjustment:

Sense of urgency: A sense of urgency needs to be built on sound and clear-cut arguments. However, these arguments can be perceived differently by individuals. While for archetypes with a high openness to ESNs the sense of urgency (e.g. “A technical transformation toward ESNs is inevitable for organizational survival as [...]”) seems reasonable and comprehensible, reluctant users and repudiators search for weak points of the argument to justify their low openness to ESNs. Pay special attention to a robust message to unambiguously convey the sense of urgency. According to online word of mouth (WoM) research the effect of responding to positive WoM is negative and that of responding to negative WoM is positive (Deng & Ravichandran, 2017). This gives strong support to not only involve archetypes with low openness to ESNs (e.g. feedback on progress; appraisal of past and former methods) but also to get the sense of urgency tangible for reluctant users and repudiators to mitigate negative WoM.

Promoting: The leadership team acts as role model, leads by example (e.g. posts information to the board members within the board community space in the ESN) and takes corrective actions (e.g. personal call to a person sending an email with cc'ing project team instead of posting the information in the project's community space in the ESN). Thereby the leadership team underpins the importance of the change and sets expectations specifically towards reluctant users and repudiators. The leadership team and employed change agents promote the change by rewarding power users. The

leadership team stabilizes openness to ESNs by rewarding and incentivizing archetypes that achieved to increase task-fit or openness to ESNs.

Medium Need for Adjustment:

Strategy plan: The leadership team considers different strategies for different people and archetypes and explicitly anchors them within the strategy plan.

Sense of urgency: The leadership team requests power users, hidden champions and limited users (characterized with a high openness to ESNs) to convey the *sense of urgency* on an employee job level.

Promoting: The leadership team and their change agents organize get-togethers, workshops and fireside chats to personally inspire, motivate thereby develop archetypes with an at least medium openness to ESNs (question marks, limited users and hidden champions - archetypes with medium or high openness to ESNs and low or medium task-fit). The leadership team stabilizes openness to ESNs by rewarding and incentivizing archetypes that succeeded in increasing task-fit or openness to ESNs.

Factors of Motivation & Areas of Intervention		Reluctant User	Reputiator	Question Mark	Limited User	Hidden Champion	Power User
(2) Liability through leadership							
Developing a vision	Having a clear picture of the change is vital for guiding the transformation process effectively. Visions help clarify the general change direction, coordinate change actions and motivate people as they are easily adaptable.	○	○	○	○	○	○
Strategy plan	Based on the examination of the environment and the vision developed, a strategy plan needs to be developed, containing relevant milestones and concrete steps for achieving successful change.	●	●	●	●	●	●
Sense of urgency	To ensure the employees attention for change, a sense of urgency must be established. The attention for the change can be ensured by showing the severity of the current situation and the urgency for change.	●	●	○	●	●	●
Consider different strategies for different people	There are different groups of people in an organization, such as rational people, people, who obey instructions of higher authorities or people, who can easily be trained and educated. Within a Change Management process, broad strategies for all different personas and learning types must be considered for effective implementation of the change.	○	○	○	○	○	○
Promoting	Promoting change can happen in different ways. Either through explicit internal or external Change Agents, or through leading by example, meaning that the management acts as a role model by actively following the change it wants to achieve. Both ways are very helpful to successfully manage change.	●	●	●	●	●	●
Execution	An existential step in any Change Management process is to actually implement the change, meaning changing one or more systems or structures undermining the change vision. This should happen while following an action plan including for example a timetable and role definitions.	○	○	○	○	○	○

high necessity level ●
 medium necessity level ●
 standard intervention ○

Table 45 Liability through leadership – archetypical differences
 Source: Own illustration

7.5.3.3 Ability through competence – archetypical differences

High Need for Adjustment:

Training: The leadership team establishes training concepts that let reluctant users experience individual benefits based on their high task fit. Power users are sensitive, responsive and supportive to questions from other archetypes, inside and outside the ESN. By quickly solving issues, power user help to keep the motivation of colleagues high. Power users document and share knowledge and solutions within the ESN via open access articles.

Medium Need for Adjustment:

Training: The leadership team establishes training concepts in order to develop and stabilize archetypes according to their characteristics. The training concept is staggered in difficulty levels. Beginner workshops catch and develop archetypes with low openness to ESNs or task-fit and advanced trainings stabilize interest of archetypes with high openness to ESNs. Trainings are seen as providing a substantial foundation to stabilize change.

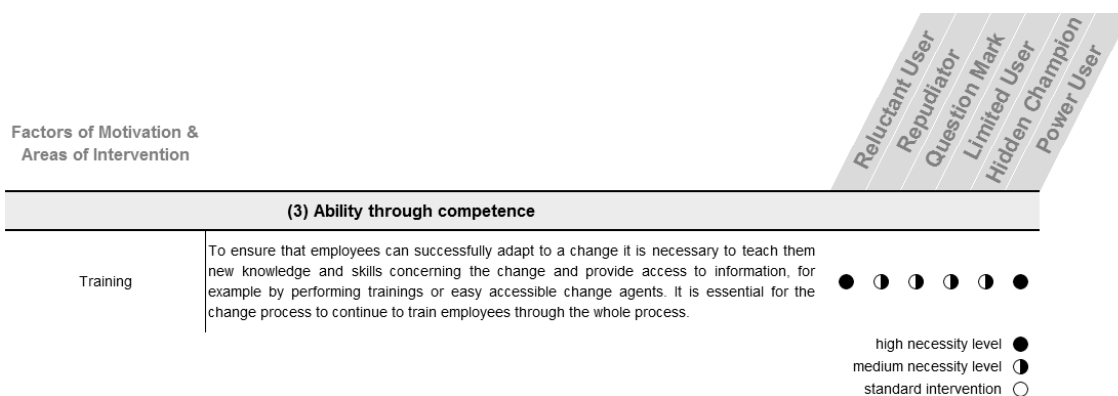


Table 46 Ability through competence – archetypical differences
 Source: Own illustration

7.5.3.4 Sensibility through transparency – archetypical differences

Medium Need for Adjustment:

Communication: The leadership team requests a change related communication concept that reflects specifics of the determined archetypes. The communication team treats the archetypes of ESN users as different target groups. To reach archetypes with low or no utilization intensity, the communication team uses neutral communication channels such as corporate presentations to not give weight to former and past information systems (e.g. email). Accordingly, not only the communication channels are selected according to the characteristics of the different archetypes of ESN users, but also the content reflects archetype-specific characteristics.

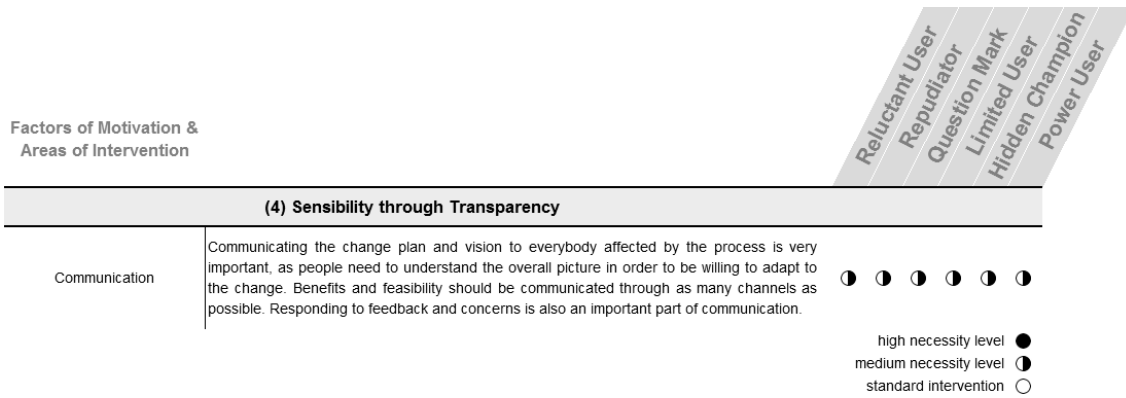


Table 47 Sensibility through transparency – archetypical differences

Source: Own illustration

7.5.3.5 Latent barriers and drivers – archetypical differences

High Need for Adjustment:

Organizational support: The leadership team implements, adjusts and uses appropriate organizational processes to unbureaucratically, uniquely and transparently recognize and reward different archetypes, specifically power users and reluctant users. Power users are role models to other archetypes of ESN users and organizations need to stabilize their high commitment by honoring their efforts. Reluctant users are, due to their high task-fit, predestined to generate short-term benefits for the organization (e.g. reluctant user – a key knowledge worker – starts to share and multiply his knowledge via the ESN across organizational boundaries and country borders). Organizations need to honor reluctant users that developed in their utilization intensity and openness to ESNs. The leadership team appropriately and comprehensibly justifies rewards for power users to not drive a damaging wedge between power users and other archetypes.

Experimenting, pilot projects, proof of concept: Reluctant users, limited users and hidden champions are integrated already in pre- and early stages of the implementation project. Reluctant users are predestined and valuable ‘devil’s advocates’. Limited users and hidden champions help to disclose and mitigate gaps of task-fit in organizational structure and processes. An early integration of these archetypes helps to build trust, to ensure a technical stability of the introduced ESN solution and to increase usefulness and effectiveness of ESN use.

Medium Need for Adjustment:

Organizational support: The leadership team implements, adjusts and uses appropriate organizational structures to create moments of individual success specifically for repudiators, question marks, limited users and hidden champions (archetypes with low or medium task-fit). These structures allow employees to benefit from ESN related best practices and success stories of ESN use. Furthermore, the organizational processes enable the leadership team to unbureaucratically, uniquely and transparently reward archetypes with low or medium task-fit which achieved to develop and share best

practices. In this way, archetypes experience individual benefits and their openness to ESNs and task-fit further develops.

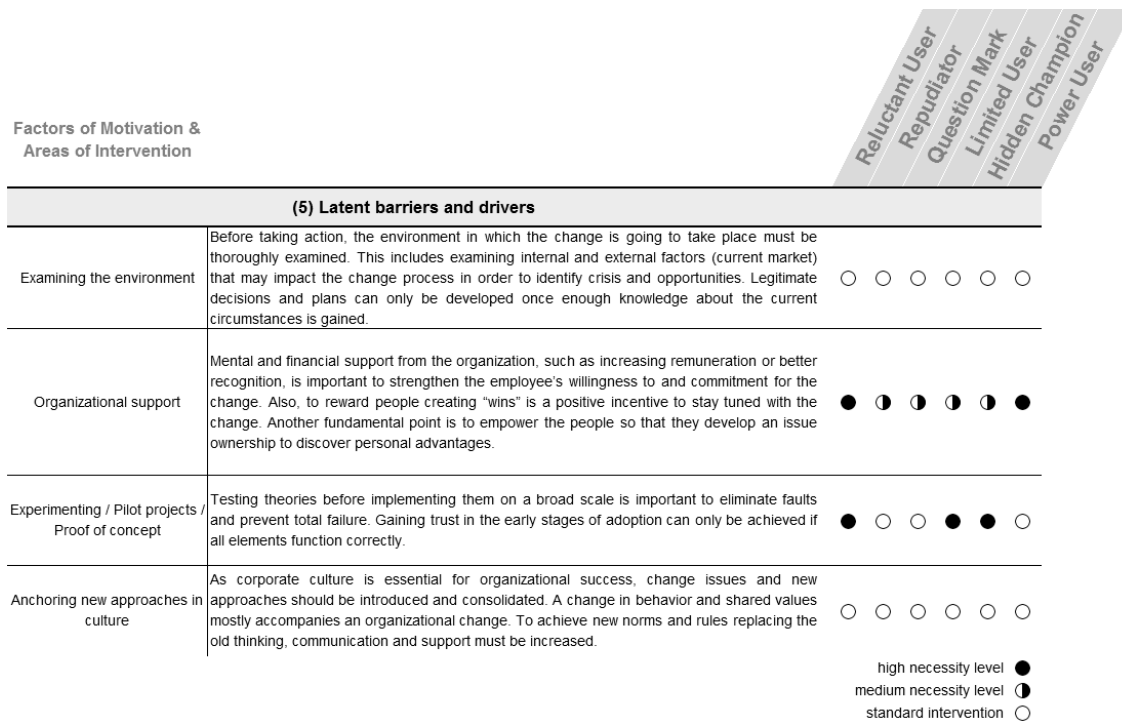


Table 48 Latent barriers and drivers – archetypical differences
 Source: Own illustration

7.6 Teaching the role of change management, innovation diffusion theory and technology acceptance models during the implementation of ESNs

7.6.1 Scope of the teaching case and the teaching instructions

This chapter presents content that has been jointly developed with the co-authors of the following article, presented in chapter 7.6.2:

Oettl, C. A., Beck, K., Raufer, F. M., Priglmeir, A. T., Böhm, M., & Krcmar, H. (2018). Zero Email initiative: a critical review of Change Management during the introduction of Enterprise Social Networks. Journal of Information Technology Teaching Cases, 8(2), 172–183.

This content presented here is not published with the aforementioned article.

7.6.1.1 Introduction

As customers, competitors and markets move faster and faster nowadays, organizations have to adapt rapidly. Changes, whether large or small, within an organization, become almost daily business. Even the power to change is now a measure for the success of a company (Beer & Nohria, 2000). The importance of good strategies to effectively conduct a transformation process increases, as well-planned processes improve the success rate of change projects. But also awareness and knowledge of problems arising during a change, should not be underestimated. Such issues can be figured out and explained by Diffusion Theory, which

categorizes types of people and their attitude towards change on an organizational level. An understanding of the individual acceptance of information systems during a technical change process is given by the short introduction of further models and theories. Summing up, the students get an overview of important criteria for Change Management within organizations and possible explanations of problems emerging during the process of change.

7.6.1.2 Target group and focus

The Teaching Case addresses students in Information Systems (B.Sc., M.Sc.) and Business Management with minor subject Informatics (B.Sc., M.Sc.). Its focus lies on the one hand on different Change Management strategies and the identification of important criteria for managing change successfully. On the other hand, an awareness for possible problems which can be determined and explained with Diffusion Theory will be established and extended.

7.6.1.3 Learning objectives and key issues

When working with this case study, the students will be faced with two different change projects in a company. The comparison of both parts of the case will show the good and the bad sides of both processes. Thereby conclusions on how to shape future change processes can be drawn. While working on this case, students develop deeper insights about the following methods and core competencies:

- Evaluation of the status quo in a company
- Qualitative comparison of two situations
- Deduction of theoretical steps from a practical case

Another teaching of the case concerns the Theory of Diffusion of Innovations. After analyzing the problems occurring during the case, the students will be able to apply the theory to the problems and develop possible solutions. In particular the students will learn the following:

- Identification of problems in a process
- Definition of causes for problems
- Development of solutions for problems

7.6.2 Teaching case: Zero Email Initiative – A critical review of Change Management during the introduction of Enterprise Social Networks

As outlined in chapter 7.1 *Disclosure of integrated publication*, this chapter contains the word-by-word, complete actual content of the following “open access” publication of which I am the main author:

Oettl, C. A., Beck, K., Rauffer, F. M., Priglmeir, A. T., Böhm, M., & Krcmar, H. (2018). Zero Email initiative: a critical review of Change Management during the introduction of Enterprise Social Networks. Journal of Information Technology Teaching Cases, 8(2), 172–183.

We present the exact take-over positions from the publication in chapter 10.4.1 *Details on integrated publication* within *Appendix – Study 5*.

7.6.2.1 The teaching case in a nutshell

How can a company successfully improve collaboration and teamwork with the introduction of new IT tools? This case offers new solutions to this question by reviewing two Change Management processes which took place over a period of six years within Atos' Zero Email initiative. The change processes of (1) replacing internal emails with an Enterprise Social Network (ESN) solution in 2012 and (2) replacing the introduced ESN solution by a second, enhanced ESN solution in 2016 are analyzed. By comparing them to established Change Management theories, important key factors of a change process can be highlighted and the evolution of Change Management within an innovative, multinational IT service provider is shown. The Teaching Case is accompanied by in-depth Teaching Notes where we craft a synthesized checklist for thorough Change Management that addresses IT adoption issues and mitigates the critic that theoretical models are too rigid for vivid organizations. Additional to this comprehensive “360°-analysis” consisting of personal interviews, inquiries on organizational communication and research on Change Management theory, the Innovation Diffusion Theory (including a reflection of recognized technology acceptance models) is used to find explanations for possible deviations from the expected outcomes.

7.6.2.2 Motivation

Have you ever been in a situation, where you were completely convinced and enthusiastic about “something”? A “something” that would solve multiple problems at once leading to overall improvements and profits that everybody would benefit from. A “something” where the necessity was crystal clear to you and was supported by valid arguments and profound research that supported all your assumptions scientifically. A solution all stakeholders would benefit from as soon as everybody was on board. There was no doubt, that you will receive endless glory and a life-size statue of yourself for your inspiring and world-changing solution. You first introduce your “something” to a friend.... “Yes, great... you should absolutely do that”. Then you explain to your peers... “Hmmm... but this “something” would interrupt another already existing “something” (actually a “something” the peers’ had once received a live-size statue for) which still works fine after several years and, unfortunately, you need to realize that a third “something” already needs our full attention at the moment; and, by the way, Mr. Somebody (a

very important somebody you never met) once said something about that this kind of “something” you mention does not work”.

Still interested in managing change? It’s a rough road with twists and turns. Full of emotions and challenges, but crucial for building up organizations and necessary when learning about how organizational development works (or does not work).

Organizations face serious challenges when implementing change on a large scale in complex environments. As a precondition, Change Management (CM) requires thorough planning and an execution attitude that consists of positivity and endurance. Especially, within organizational development that is closely intertwined with CM. Change within organizations starts with diverse initiatives to enforce strategical, tactical and operative measures to achieve the desired change targets. In cost-driven markets, organisations often express their change intentions, but they also need to mobilize dedicated and shared resources to conduct the change successfully (Beer & Nohria, 2000; Creasey, 2016).

7.6.2.3 Introducing the case

A very prominent example of organizational development and organizational change is illustrated by the approach of Atos to their target of abolishing email from internal communication.

“We are producing data on a massive scale that is fast polluting our working environments and also encroaching into our personal lives. At Atos we are taking action now to reverse this trend, just as organisations took measures to reduce environmental pollution after the industrial revolution” – Thierry Breton, 2011 (Atos, 2017b)

With this statement, Atos Chairman and CEO Thierry Breton announced the so-called Zero Email initiative in 2011 with the ambitious goal of eliminating all internal emails at Atos within the next three years (Atos, 2013).

Atos introduced an Enterprise Social Network (ESN) as the central element of this profound organizational change target. ESNs are social platforms that support knowledge workers to communicate with colleagues, to identify potential communication partners, to create, publish or edit their own contributions and also to access content created by other users (boyd & Ellison, 2007; Leonardi et al., 2013). Thereby, users are required to take an active and open part within the ESN by sharing their thoughts, knowledge and capabilities (e.g., in discussions or by voicing criticism). The existence of personalized user profiles is a key characteristic of ESNs. These profiles link authors to content and label ESNs as social platforms (boyd & Ellison, 2007).

ESNs evolution can be traced back to the need of organizations to efficiently create, develop and distribute business relevant information within today’s dynamic, decentralized, virtual and project-driven work environments (Strother et al., 2012). Especially, as most information and communication solutions today (email, intranet, wiki, instant messaging...) rather lead to information overload than to efficient processing of business relevant information (Sobotta & Hummel, 2015; Verdot et al., 2011). Here, ESNs are introduced and discussed to provide a

socio-technical solution that increases communication and collaboration capabilities within organizations to the necessary level (Moser et al., 2002).

ESNs determine the productivity improvement of knowledge workers compared to existent technological solutions (mostly email) today (Treem & Leonardi, 2013). ESNs receive increasing attention and are widely used especially in multinational organizations (Ellison et al., 2015; Leonardi et al., 2013). Business analysts found out, that “companies could raise the productivity of knowledge workers by 20 to 25 percent” with the use of ESNs (Bughin et al., 2012).

However, even if ESNs are introduced in organizations, the value of their contributions seems unclear and 80% of projects do not fulfil expectations (Mann et al., 2012). "The typical ROI of any social technology becomes positive when 15% to 25% of employees use such technology extensively and companies should not assume that “If we build it, they will come” (Bughin, 2013).

“Atos SE (Societas Europaea) is a leader in digital transformation with circa 100 000 employees in 72 countries and pro forma annual revenue of circa € 12 billion. Serving a global client base, the Group is the European leader in Big Data, Cybersecurity, Digital Workplace and provides Cloud services, Infrastructure & Data Management, Business & Platform solutions, as well as transactional services through Worldline, the European leader in the payment industry” (Atos, 2017a, p. 4). Furthermore, Atos owns several sub-brands, such as Worldline, Unify or Atos Codex. As a leading information technology services company Atos focuses on business technology that powers progress and helps organizations to form their future (Atos, 2017a; blueKiwi, 2017).

This teaching case depicts how Atos coordinated and managed two large change processes to adapt their organizational speed to the fast digital working pace in today’s markets. This case is based on the data of seven expert interviews with key stakeholders (change manager, product owner and change agents) of the introduced changes as well as company documentation and official product descriptions. It profoundly outlines all the complex and energetic factors of Change Management. The power of Change Management to construct and deconstruct opportunities for organizational development is thereby emphasized. In lively discussions and debates you are invited to learn more about factors of successful change management and to experience the challenging dilemmas and hurdles that need to be solved throughout the change management process.

7.6.2.3.1 Context of the blueKiwi change

7.6.2.3.1.1 Guiding Change: Zero Email Initiative

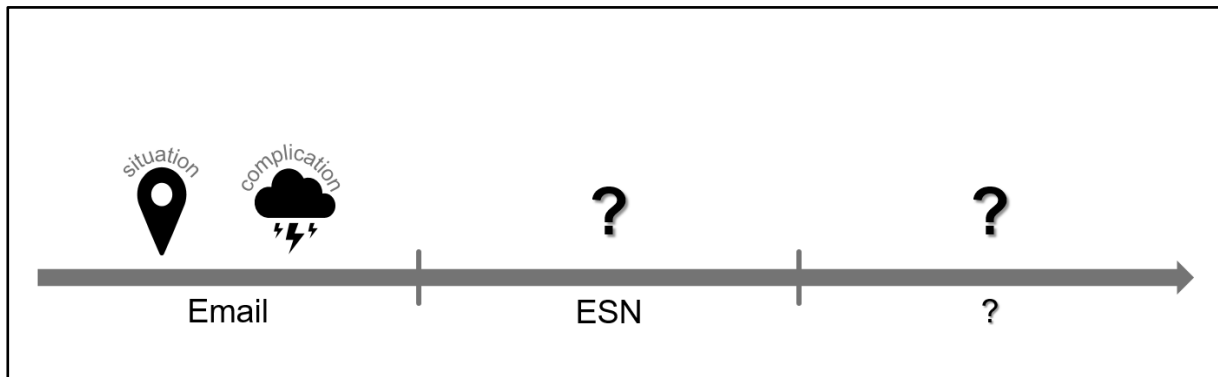


Figure 51 Teaching case structure “Email”
Source: Own illustration

Over time the gradually increasing email overload at Atos became an unbearable problem that the company had to face and a new solution had to be found (see Figure 51). Email overload is a term used when people struggle with too many emails, when email software is used to support the collaborative quality of task and project management (Bellotti, Ducheneaut, Howard, Smith, & Grinter, 2005). This results in the feeling of being overloaded. To better understand this phenomenon and its impact, surveys and analyses were conducted to show the amount of email used at Atos and in general. As displayed in Figure 52, a study conducted at Atos among 300 employees measuring their total email traffic for one week showed that they generated 85 000 messages (sent or received emails) (Silic et al., 2015).

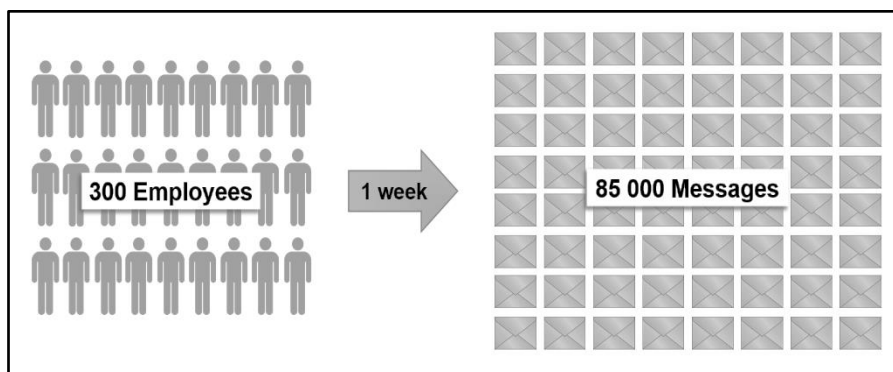


Figure 52 Email traffic at Atos
Source: Silic et al. (2015)

Figure 53 shows another alarming statistic, which revealed that 73% of employees spent more than one-quarter of their time managing email, and the majority of them see this time as wasted, providing no added value to their productivity (Silic et al., 2015).

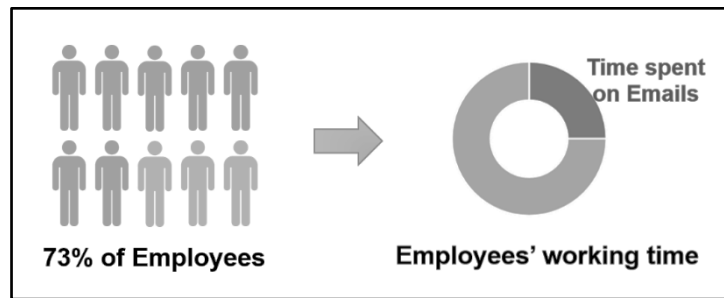


Figure 53 Time spent on emails
Source: Silic et al. (2015)

The unsustainability of emails within Atos has many reasons and many factors contribute to the circumstance that email has been perceived as outdated regarding information management issues. Increasing data transfer and the incorrect usage of emails have led to unacceptable numbers of “unnecessarily” sent emails within the firm. Email misuse e.g. by cc’ing emails unnecessarily results in a large amount of time being spent in order to structure the email inbox and the information within. If the time used for email management could be reduced, this would result in an overall productivity improvement within companies and an enhanced performance of employees (Shipilov & Crawford, 2015). Increasing productivity and decreasing stress levels while not processing messages is confirmed through an experiment conducted by researchers from the University of California, Irvine and the U.S. Army (Burkus, 2016b). Especially the younger generation prefers other sources for communicating, mainly because constantly better communication and collaboration techniques are emerging. Only 18% of them prefer to use email as a method for communication (Schwabel, 2014).

These statistics support the call for a Zero Email initiative. The initiative’s goal was to eliminate internal emails at Atos within three years by reallocating communication and collaboration from conventional tools like email and telephone to new social collaboration tools (Atos, 2013). *Which means of communication would you prefer to use for communicating with your colleagues – ESN, email or do you prefer another alternative – and why? What could you do to reduce your personal email traffic?*

7.6.2.3.1.2 blueKiwi as the Driving Force of Zero Email

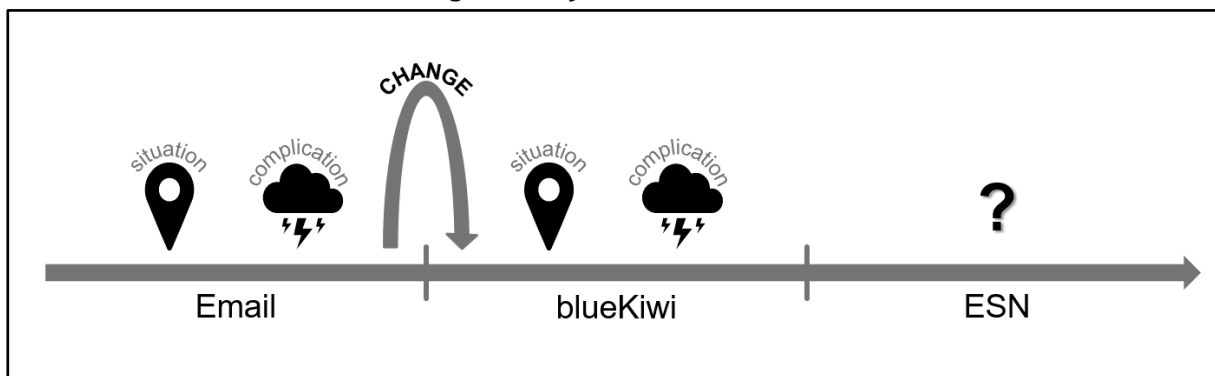


Figure 54 Teaching case structure “blueKiwi”
Source: Own illustration

The key to the success of the Zero Email initiative with the aim of ensuring quality work environments has been the deployment of a series of sophisticated collaboration technologies (Atos, 2013). During 2012, Atos introduced several collaborative, social media based communications tools. The biggest project was the acquisition of the startup company blueKiwi in April 2012. Its Enterprise Social Network (ESN), called “blueKiwi”, satisfied all internal requirements for a tool that would help Atos become a Zero Email company (see Figure 54). It enables the organization to improve productivity through social collaboration on a global level. The rollout was supposed to transform Atos into a social organization, making it a better workplace, increasing business synergies and efficiency and creating the necessary work environment for the future. Additionally, Atos’ goal was to enter the newly emerging social IT market with blueKiwi and the launch of two joint ventures, creating synergies by connecting their expertise in consulting, integration, and Change Management (Atos, 2012b).

blueKiwi focuses on the creation of online work communities across Atos on a global scale. This is supposed to ensure productivity by creating work spaces for groups, services or projects. In literature, several definitions of virtual communities exist. The active interaction between people with the goal of sharing knowledge online differs from the conventional definition of communication via email. The following set of conditions describes an online community: people, interactivity, goal sharing and cyberspace (Koh & Kim Y.-G., 2004) while, on the other hand, email basically is a method of exchanging digital messages from one sender to one or more recipients (Silic et al., 2015). When analyzing the blueKiwi community feature, which is one of the most important functions of the tool, it becomes apparent that all criteria of virtual communities are fulfilled. All employees of Atos work together interactively to achieve the organizations’ goals using real-time features that are easily accessible in cyberspace. This core feature is enhanced with activity feeds enabling real-time updates from contacts and communities. Always being up-to-date increases work productivity and performance. blueKiwi also supports public and private instant messaging with the possibility of attaching links and documents, tagging names and formatting the text (blueKiwi, 2017). Additionally, voice mails as well as global content sharing options are implemented (Atos, 2013). To track performance and user behavior the blueKiwi infrastructure also provides analytical options to measure upcoming trends, the participation of the employees and how to enhance their adoption of the tool. Nowadays, addressing security issues within social networks is highly important, wherefore the tool follows security standards. Mobility options making sure that blueKiwi can be used on mobile devices complete the functionality portfolio (blueKiwi, 2017). In Table 49, we show an overview of blueKiwi’s functionalities. To provide an overview of the application user interface we present a screenshot of blueKiwi in Figure 55.

blueKiwi’s functionalities
Online work communities
Activity feeds enabling real time updates from contacts and communities
Public and private instant messaging
Global content sharing

Applications for mobile devices
Statistical options for analysis of community and workspace activities

Table 49 blueKiwi's functionalities
Source: blueKiwi (2017)

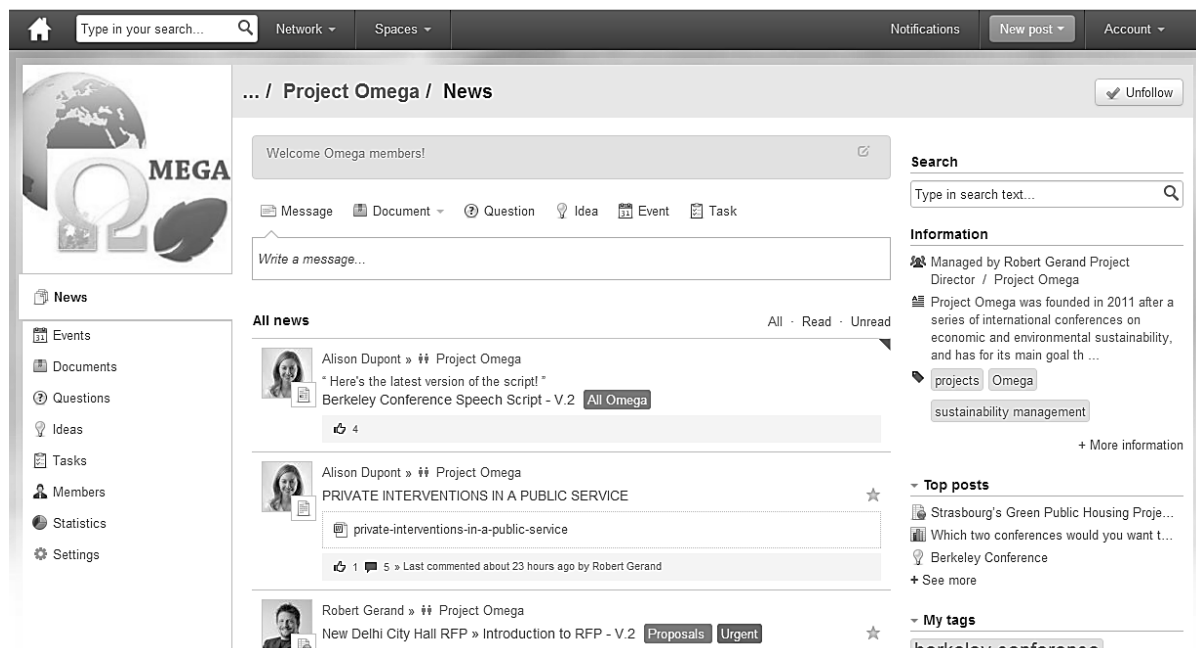


Figure 55 Screenshot of blueKiwi
Source: Whatasoftware (2017)

7.6.2.3.2 The blueKiwi change

7.6.2.3.2.1 Change Management: Integrating blueKiwi into Atos

“Never underestimate the power of the mind to disempower.” – John P. Kotter

As Kotter states, the minds of people can have a huge impact on the success of change. Therefore, change must start with changing the mindset of employees. To make sure that the employees accepted the ESN several cultural shifts needed to be conducted (Silic et al., 2015).

- Individual to community shift: Change from thinking as an individual to thinking within a community by removing information silos
- Controlling to leading shift: Enabling a collaborative leadership factor by promoting a new management style
- Experts to ambassadors shift: Promoters for the initiative ensuring the employees support

- From information overload to time for business shift: Producing better results by using the new ways of collaboration

All these cultural shifts could only be achieved if Atos managed to successfully conduct a change process. The approach Atos chose consisted of several smaller projects within the overall process. It did not follow a specific Change Management model, but a plan and vision for the change facilitated the whole process by guiding managers and team leaders.

The following examinations will focus on the change process that has been conducted within Germany. In some countries, the change process started at the end of 2012. Plans for the blueKiwi integration in Germany started in the middle of 2012, the actual Change Management process in 2013. Because the change specifications came from the global Atos headquarters in France, the rollout team of Atos in Germany did not shape and plan the change process, even though it would have been highly important to examine the current regional circumstances. The change started with the announcement of the Zero Email initiative which formed the vision behind all Change Management activities. The vision created a clear picture of the goal to be achieved and strengthened people's motivation to change. The change team's responsibilities lied within communicating the global goals to the single divisions in all German Atos locations. To communicate efficiently, their main tasks included building communities within blueKiwi and the planning and execution of blueKiwi trainings. *Which measures can you think of that would facilitate cultural shifts within an organization?*

The individual to community shift was achieved by various initiatives. Sharing success stories was an initiative where successful examples of social collaboration were gathered to serve as a positive example for employees. Many communities were created in which employees and experts could share their knowledge more easily. Especially the inner sense of urgency of every individual employee must be driven forward to ensure attention for the whole process and the goal.

To achieve the cultural shift from controlling to leading which implied gaining leaders' engagement, a bonus scheme was developed in order to motivate management to support the Zero Email initiative. Bonuses were connected directly to the success of the initiative which helped with motivating leaders. Over 5 000 managers were trained in the benefits of the new ESN and were provided with benefit examples that they could transfer by leading by example to their communities.

Building an ambassador network was another important shift within the Change Management process. At the early stages of the change, the ambassador network was used to promote the Zero Email goal in general. After the blueKiwi tool was launched, the ambassadors' role shifted. They then had the task to spread blueKiwi throughout Atos and motivate employees to use the new tool. They achieved this by providing local trainings and spreading their enthusiasm about the "new world".

7.6.2.3.2.2 *Initiatives driving the change process*

On-site trainings were an important part of the whole change process and were differentiated into multi-level trainings for beginners, advanced trainings and community leader trainings.

The initiative started with awareness trainings to show the need for a new tool. As a first step, an email guideline was published emphasizing the correct use of e-mail in order to create awareness of the disadvantages of incorrect e-mail usage. These trainings also informed people on when to use other tools, e.g. SharePoint for document sharing, which ensured that users were made aware of the advantages of different types of IT tools. In end user trainings, the Atos employees learned how to access and start using blueKiwi. Future community leaders were educated with the help of special courses and people were animated to start their own communities. Online tutorials were also an important aspect, where different age groups needed different kind of attention. In general, younger employees were more open to the new tool and the change process than the older generation. Nevertheless, some enthusiastic pioneers among the employees could be identified and developed to encourage their co-workers or team members to fight for the vision. In addition, a well-organized feedback loop had just barely started and reaction time to change requests was not as high as it should have been.

Above all, discussions and negotiations with works councils and lower level management were conducted. This exchange provided insight into all aspects affected by the ESN and was valuable to prepare and conduct the decision-making processes in which management and works council were asked to agree on fast but reasonable implementation terms.

From a global view, blueKiwi was required to become introduced as a mandatory tool within the Atos communication environment. Here, International differences in law and the role and level of participation in decision-making of works councils during the implementation phase had to be considered thoroughly. A fast and pragmatic implementation driven by strong top management support from the global Atos management had to be balanced with important and justified local requirements in Germany. One example was, that analyses and discussions with data protection officers and works council revealed issues that new terms of regulation were required before blueKiwi could be rolled out. Especially questions of (a) data privacy, (b) the so far unknown high level of transparency and (c) how to deal with an open and uncontrolled community forming were major topics in the negotiations with the works councils. All in all, blueKiwi could not be introduced as the system that completely replaces internal email within Atos as desired. For communication, alternative tools such as email clients still have to be offered.

Throughout the whole process, communication was the key aspect during the integration. Multiple communication channels such as written handouts or face-to-face communication were utilized to convey the Zero Email message and the necessity of blueKiwi through the Change Management team, the CEO and individual service lines. Mostly the communication was conducted as a top-down approach. Expectations for the new tool were high from the start as the Zero Email initiative was highly praised and the new tool strongly advertised. After initial performance difficulties and too many unrealistic promises, the tool managed to live up to many of the employees' and managers' expectations.

The Change Management process is ongoing. blueKiwi trainings are still conducted for people who are new in the company and people who have not been using blueKiwi until this point.

Additionally, Lessons Learned workshops were held during the whole process to ensure the Zero Email initiatives' ongoing success and to support future changes.

7.6.2.3.3 Context of the Circuit change

7.6.2.3.3.1 Zero Email – Mission accomplished?

The Atos Zero Email initiative appeared to be working, even though it did not reach the target of zero emails within the company (Burkus, 2016a). But using a social collaboration platform has many more (long-term) advantages. Because of the smart way of communication, larger and more flexible teams can be introduced to perform more complex projects. Another beneficial point is the easy transformation of knowledge and fast access to information, which is also related to better project work. As it is nearly impossible to abandon the whole email traffic in an organization, the vision of Atos to become a Zero Email company seems hardly realizable. The constant level of email quantities from external partners and third parties requires Atos' employees to deal with numerous emails daily (Silic et al., 2015).

However, the initiative appeared to have visible success until the end of 2013. Atos could reduce the overall internal email flow by 60%, shown by the weekly number of messages per employee, which decreased from 100 emails in 2011 to less than 40 in the end of 2013 (Burkus, 2016a). Initially, the email decrease implicated a high adoption rate of blueKiwi and indicated the replacement of emails by the functionalities of the new tool (Silic et al., 2015). Especially the community-based environment of blueKiwi supported the reduction of email use for internal communication. Despite the seemingly positive result at the beginning, a stagnation of the process emerged over time.

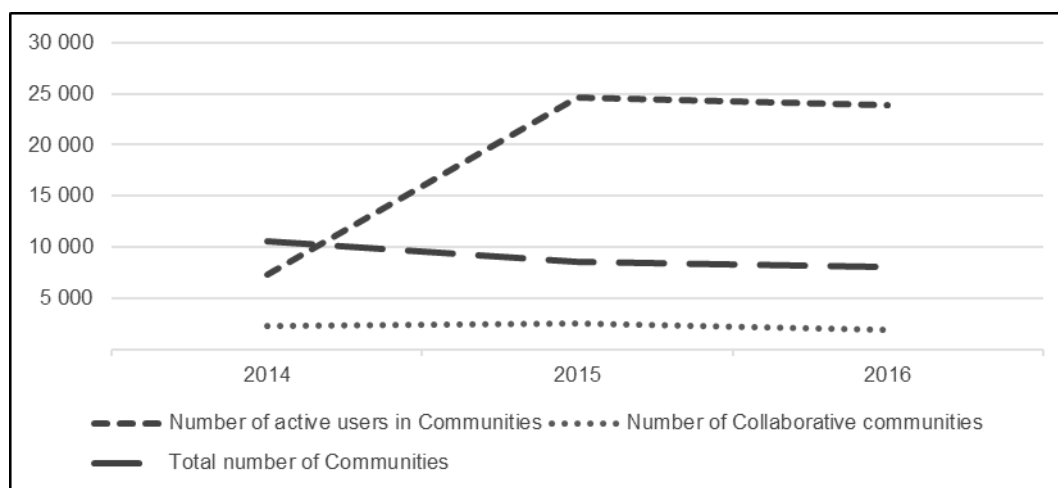


Figure 56 blueKiwi developments
Source: Atos (2016) – Own illustration

As presented in Figure 56, the number of communities existing in blueKiwi at Atos declined from 2014 to 2016. Otherwise, an increased number of active users joined blueKiwi's communities until 2015, whereby in 2016, less users actively participated in these communities. At this time, Atos announced the acquisition of Unify, a worldwide leader in solutions for real-time communication and real-time collaboration. This allowed Atos to address the stagnation

problem and the arising resignation of the users of blueKiwi and to revive the Zero Email campaign by Circuit, a cutting-edge ESN solution developed by Unify. *Would you rate the achievements of the blueKiwi change as successful and why?*

7.6.2.3.3.2 About Unify

Unify provides solutions for the “workplace of the future” and develops cloud-based platforms, tools, channels and media to enhance real-time communication and real-time collaboration within organizations worldwide. Especially the product Circuit can be seen as a powerful, well-known and recognized collaboration solution (Unify, 2017).

Founded in 2008 as Siemens Enterprise Communication and headquartered in Munich (Germany), Unify was a joint venture between The Gores Group (51%) and Siemens (49%), active mainly in Europe and in the Americas. With 5 600 employees and active in over 60 countries, Unify generated € 1.2 billion revenue in 2015. (Atos, The Gores Group, & Siemens, 2015).

The acquisition of Unify was announced in 2015 and strengthened Atos’ portfolio of integrated communication solutions. On January 20th of 2016, Atos announced having completed the acquisition of Unify, the world number three in integrated communication solutions. The acquisition creates a unique integrated proposition for unified communications improving the social collaboration, digital transformation and business performance of its clients (Atos, 2017a).

Thierry Breton, Chairman and CEO of Atos stated: “Unify portfolio [...] is a perfect match that uniquely complements existing Atos digital capabilities” (Atos et al., 2015). With the takeover, Atos strengthened its opportunity and knowledge to enhance its end-to-end solutions in the area of unified communications, to enable effective social interactions and therefore higher working and business performance for their customers (Atos et al., 2015).

Central functions, like Human Resources and Purchasing, were merged and Sales and Marketing of both companies were unified to create a consistent customer appearance. In parallel, a thorough change program started to integrate the Unify portfolio and business.

7.6.2.3.3.3 Circuit as the missing puzzle piece for Zero Email?

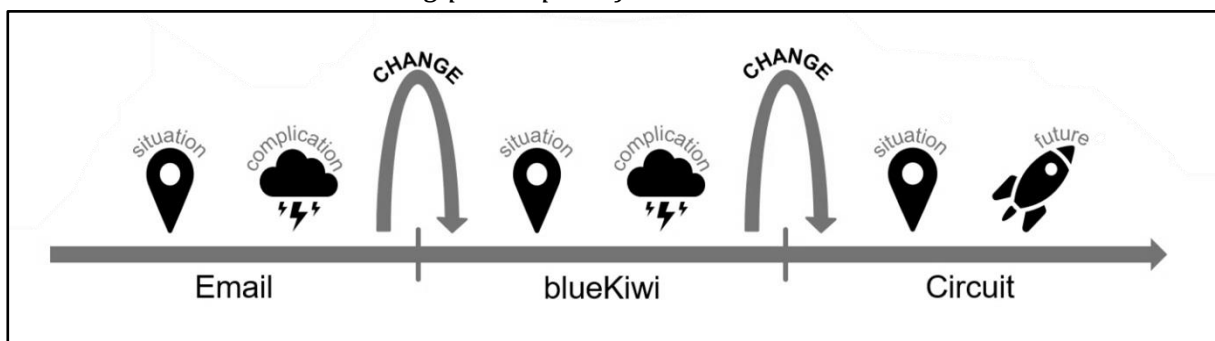


Figure 57 Teaching case structure “Circuit”
Source: Own illustration

As mentioned above, Unify continues to provide solutions for unified communications and real time issues within Atos. With its WebRTC (web real-time communication) based communication and collaboration solution called Circuit (Unify, 2016), a high value product was already established (see Figure 57). Circuit offers various functionalities. The main strength of Circuit lies within real-time communication. Individual conversations for each work stream can be created which results in a reduced information volume. Users only receive relevant information and they profit from shorter connection times for conversations: IDs and telephone bridge numbers are not necessary. This functionality makes communication for geographically distributed teams easy by using calls via PC but also via phone while moving, screen sharing and other features (Unify, 2016). An analysis of blueKiwi within Atos was and further will be conducted in order to examine which functionalities of blueKiwi are well proven and therefore should also be integrated into the final version of Circuit. blueKiwi’s open community environment and its searching functionalities are going to be integrated, although not to such a large extent. As extensive and informative user-profiles emerge as popular among employees and also seem to be very useful when it comes to expert search, profiles within Circuit are getting extended. Further functionalities which may be integrated in future are the survey and analytic options, theme tags within communities, dashboards, wikis and micro blogging. Because of the cloud-based structure of Circuit, it might be developed into a platform-providing service where other platforms such as SharePoint can be integrated. This developer program will ensure the flexibility and integrity of the Circuit solution also by implementing a notification center for combining news of all portals.

Circuit delivers many functionalities that blueKiwi cannot provide, especially concerning the daily communication between employees. A comparison of blueKiwi and Circuit is shown in Table 50. Integrating and extending Circuit within Atos can therefore be an important step towards the Zero Email goal at Atos. *Do you think the different characteristics of blueKiwi and Circuit require addressing employees differently during the respective Change Management process? What would your message be to the employees?*

	blueKiwi	Circuit
Main goal	Collaboration and sharing tool used as Social Intranet.	Real-time communication tool developed as a platform.
Communities	Public or private teamwork spaces for cross functional information sharing across borders and hierarchies.	Team collaboration can be organized in conversations, searchable threads consisting of texts, documents and other input.
Communication	Private messages and community messages.	Real-time call options, conferences and screen sharing with high quality voice and HD video that can be moved from device to device. Private and group messages can be posted in conversations.

Content sharing	Content can be shared as member posts or within communities. Following content can be created and uploaded in blueKiwi: Messages, Documents (Notes, Files, Bookmarks), Videos, Surveys, Events, Ideas, Questions and Tasks. Structure can be accomplished by using tags, comments and notes. Graphical adjustments are possible.	Box.com cloud for file sharing. All conversations can be searched to find people, files and specific words.
Profiles	Detailed profiles on which member searches can be performed.	Simple profiles with basic information about user.
Analytics	Statistical options for analysis of community and workspace activities.	No analytic features.
Mobility	Applications for tablet and phone devices.	Applications for tablet and phone devices. Circuit Meeting room device for conferences within small rooms.

Table 50 Comparison of blueKiwi and Circuit functionalities

Source: blueKiwi (2017) and Unify (2017) – Own illustration

7.6.2.3.4 *The Circuit change*

7.6.2.3.4.1 *Change Management: Integrating Circuit into Atos*

As stated before, Circuit has many features that support Atos and its employees to manage business processes better and increase performance and productivity. The previous tool for communication within Atos was Skype for Business and its replacement by Circuit is now being internally discussed. Furthermore, blueKiwi as a powerful solution for community-based collaboration has been taken out of the market and substituted by Unify's solution, which has been enriched with added value gained from experiences made with blueKiwi (Bohn, 2017). For an indefinite time, blueKiwi remains within Atos parallel with Circuit, because of the high rate of knowledge accumulated and saved over time within the tool.

To fully establish the new solution Circuit and to ensure the successful change within Atos, a gradual integration process is planned. The process is not based on a theoretical Change Management model, but nevertheless structured and scheduled. To include knowledge and experiences of previous changes and to lead the current change, the previous Change Management team has been reactivated. Before the Change Management process starts, several steps must be taken in order to gain knowledge about the status quo within Atos. This started with a blueKiwi application analysis, which consisted of an in-depth user survey in order to determine user relevant blueKiwi applications that should remain in the new ESN solution. Performance characteristics and deficits in blueKiwi were compared with those in Circuit. Especially the stability of the product and agile development methods are emphasized and focused on to guarantee a reliable tool that enhances user experience. Additionally, during the blueKiwi change the mental attitude within the organization concerning more openness and transparency has changed, which now facilitates the consolidation of bluekiwi and circuit. The Zero Email initiative supports continuity within the Circuit change, too, but is not as highlighted

and hyped as during the blueKiwi change. Circuit isn't viewed as a disruption but as an instrument to reach the greater goal. Further, as the change process started, it was divided into several blurred stages which only serve as steps for better structure.

First, a proof of concept was conducted in autumn 2016 before the Circuit rollout. Selected users were trained and received access to Circuit as so called "Early Adopters" with the aim of transferring an understanding of the acceptance and adoption of Circuit within Atos. The planned Change Management was tested and evaluated. Afterwards, the network of ambassadors was adopted from the existing pool of ambassadors established during the blueKiwi change and additional ambitious employees. They received technical training to get detailed information about Circuit's functionalities for their future tasks. The main role of an ambassador is to be a regionally located contact for employees. With their knowledge, they support and stimulate the adoption process within these locations and train groups of people on how to use the tool matched to their needs and cultural background. This also includes age-related adoption issues. Ideally this leads to help for self-help within these groups. In the second phase, which lasted from November to December in 2016, every Atos' employee received a Circuit account. The goal was to evaluate if all services functioned correctly and if Circuit fits within the Atos infrastructure and environment. Usage is voluntary because of agreements with the works council, and the employees are asked to gain experience with the new tool and give feedback. Therefore, a wide range of feedback channels were built up, including forums, support chats, customer advisor reconcile and the internal product manager community. Additionally, the assessment of the fulfillment of "must-have" criteria of Circuit within Atos was conducted during this phase. Skype for Business is planned to be replaced as one of the next steps, as necessary functionalities are represented in Circuit. In a last phase from December 2016 to April 2017, the adoption of Circuit needs to be ensured by using different training methods, use case courses, videos and further communication. The trainings are free and not obligatory for employees and are mostly given online. As a result, employees receive a positive first impression of the tool. Circuit's short update cycles are supposed to ensure the users' curiosity. Trouble free usage is vital in the beginning which is why fast response teams were introduced to prevent initial difficulties and dissatisfaction. The communication within the process is planned as a top-down approach to emphasize the importance of the usage. "Multipliers" are being identified and discussions with top management and works councils will have a large impact on future processes and steps. With an appropriate agreement, employees and team members could be encouraged by middle management to use Circuit in daily communication which immediately increased the number of active users. Here, especially the communication between Atos and new Atos employees within the Unify organization (e.g. within the integration project) via Circuit helps to rise the utilization frequency and to convince more and more employees to use Circuit. This experience strengthened the organization-wide understanding of the sense - to speed up organizational communication and collaboration - behind the new system and the executed change process. *Which assets were created during the blueKiwi change that now support the Circuit change? How can these assets be utilized for the Circuit change process?*

7.6.2.3.5 Understanding change

To analyze Atos' innovative and aggressive approach of organizational development, the well-recognized Innovation Diffusion Theory (IDT) of Rogers (2003) can be used. The IDT categorizes types of people and their attitude towards change on an organizational level (see Figure 58).

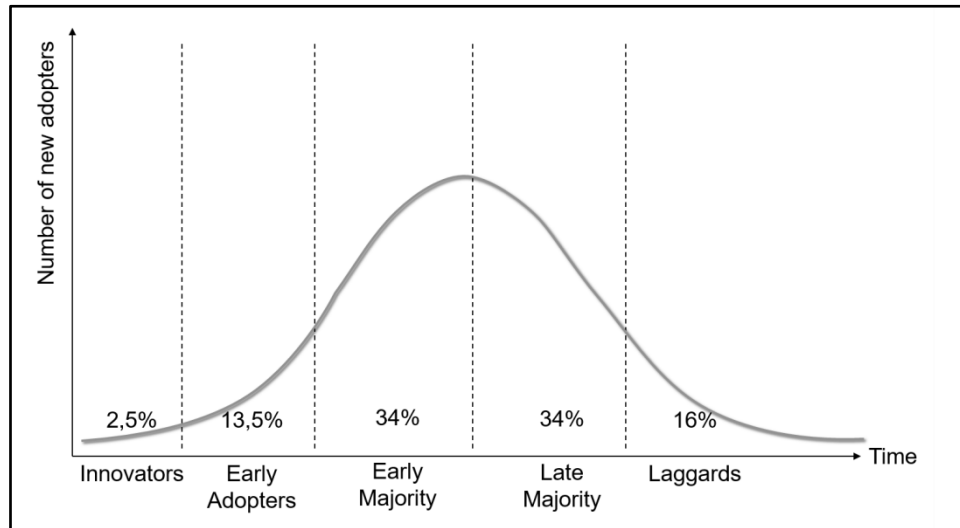


Figure 58 Adoption / Innovation Curve

Source: Rogers (2003)

People categorized as Innovators have a high interest in new ideas and are very venturesome. Early Adopters are usually more integrated into the local social system and own a high degree of opinion leadership. In contrast, individuals belonging to the Early Majority are not opinion leaders, but interact a lot with peers. The Late Majority adopt an innovation because this adoption is necessary to maintain their position within the organization or because of high peer pressure, which means that they only adopt if most of the system already has proven efficient. The last category of people to adopt an innovation are the Laggards which tend to be quite isolated from the social system and are past-oriented. Laggards are very suspicious of innovations, so they have to be completely sure, that the innovation will not fail before they adopt it (Rogers, 2003). With this pattern it is possible to understand change processes and how to adapt Change Management when necessary. *In which category would you see yourself during introduction of Circuit and why? As a manager, on which type of user would you focus your Change Management efforts?*

Additionally, individual user acceptance and adoption of information systems e.g. ESN can be analysed by using the Technology Acceptance Model (TAM) (Fred D. Davis, 1989). The TAM and its two variants (TAM2 and TAM3) centres two individual determinants of IT adoption and use: *perceived usefulness* and *perceived ease of use* (see Figure 59).

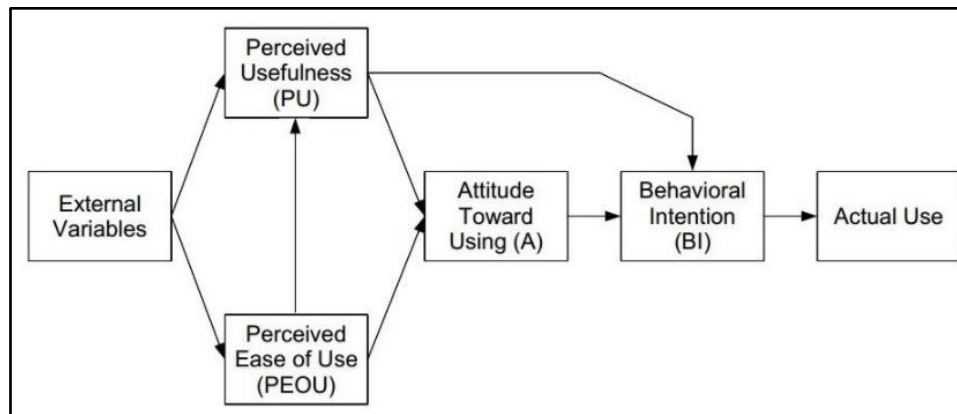


Figure 59 Technology Acceptance Model

Source: Fred D. Davis (1989)

Perceived usefulness is the extent to which a person believes that using information technology will enhance his or her job performance. *Perceived ease of use* defines the degree to which a person believes that using an IT will be free of effort. Both determinants describe the attitude of an individual towards using and therefore the actual use of a new technology. When introducing a new information system within an organization the TAM can help to understand peoples' needs during Change Management. *What would be the 'perceived usefulness' and the 'perceived ease of use' of using Circuit for you?*

7.6.2.3.6 Reflecting the case

7.6.2.3.6.1 Questions for reflection

1. As a manager, would you support the zero-email initiative? How would you contribute to the success of this initiative?
2. From your perspective, which three aspects during the introduced two Change Management processes were performed especially well and which three aspects impacted the change negatively?
3. Can you identify ten measures for successfully implementing change and how would you prioritize them?

7.6.2.3.6.2 Debate topic

Discuss the following bold statements bearing in mind the case described above. Think about arguments for and against these statements.

1. **Technology is not key!** It is all about professional change management and a bold strategic vision to create movement within an organization.
2. When leading Change Management projects, you are better off by focusing your efforts on the change repudiators. According to online word of mouth (WoM) research the effect of responding to positive WoM is negative and that of responding to negative

WoM is positive (Deng & Ravichandran, 2017). This also counts for Change Management.

7.6.2.4 Conclusion

To conclude this case, there are many theoretical approaches to Change Management that have a lot of steps in common. These theoretical models can be a good guideline for companies when performing large change projects. In practice, however, at least Atos does not strictly follow any of these theoretical models. Atos rather follows its own learnings from past change projects in order to plan a new one. One advantage of this is, that as each company has its own environment, the steps of the change project fit well with the company. On the other hand, knowledge about past projects often depends on the people involved in it. In practice, we suggest institutionalizing an approach by combining (1) these learnings from the past with (2) the introduced checklist for cautious Change Management and fine-tune it with a critical and honest reflection of (3) extant drivers and predictors of technology acceptance. This combines both the advantages of theoretical research and the company's knowledge about its own environment and employees. Having such a general model for change projects within the company could help in making future changes a success.

7.6.3 Teaching instructions

This chapter presents the teaching instructions that have been jointly developed with the co-authors of the following article, presented in chapter 7.6.2:

Oettl, C. A., Beck, K., Rauffer, F. M., Priglmeir, A. T., Böhm, M., & Krcmar, H. (2018). Zero Email initiative: a critical review of Change Management during the introduction of Enterprise Social Networks. Journal of Information Technology Teaching Cases, 8(2), 172–183.

These teaching instructions presented here are not published with the aforementioned article.

7.6.3.1 Introduction

In this section, we provide a structured recommendation for teaching the corresponding case by using the Teaching Notes supportively. We suggest dividing the lecture into five sections to effectively learn and consolidate the content. The Teaching Case is based on three sections that build on one another. As presented in Figure 60, the chronological evolution from email use to Enterprise Social Network communication with blueKiwi to collaboration via Circuit within Atos will be covered. Two theory parts are recommended to support and strengthen the necessary background knowledge about Change Management and Diffusion Theory.

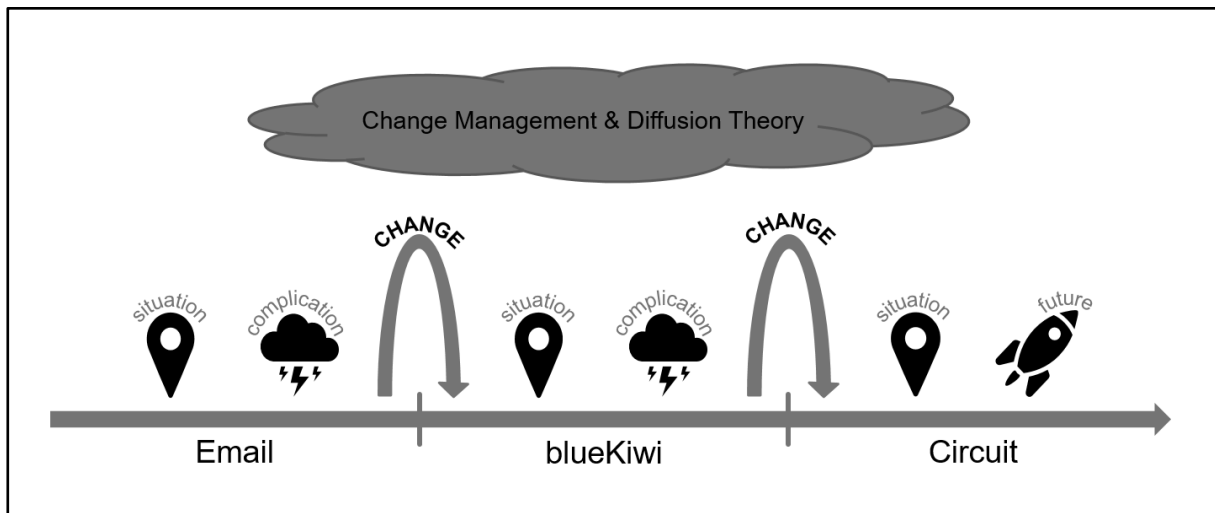


Figure 60 Structure of teaching case and teaching notes

Source: Own illustration

The session starts with Part 1 which deals with the email use in general and within Atos to describe the initial situation. We present the structure of Part 1 in Figure 61. Furthermore, possibly occurring complications of using emails as the communication tool within organizations are demonstrated. This section is thoroughly supported by the Teaching Case, and is additionally complemented by several teaching methods including group assignments, role plays and discussions which should be integrated in order to create an exciting lesson. As this part is not yet concretely concerned with Change Management itself, it is possible to skip Part 1 (or parts of it) and immediately start with Part 2, the first Theory Block. In Part 2, it is supposed to create a general understanding of Change Management, its history, theories and models. A selection of appropriate and inspiring teaching methods is given. We show the structure of Part 2 in Figure 62. To keep up the attention of the students and reflect practice, subsequently, Part 3 shows the change process of integrating blueKiwi into Atos and the situation of integrating the new Enterprise Social Network within the organization. Not only the benefits, but also complications during and after the change are evaluated and analyzed within the Teaching Case. Different ways to teach and guide this section are suggested. We outline the structure of Part 3 in Figure 63. After Part 3 and the analysis of Change Management in practice, the second theoretical block follows with Part 4. To understand why problems and resignation occur, Part 4 gives explanations by explaining and applying the Diffusion Theory. But not only the organizational perspective is considered, also further technology acceptance models and theories dealing with individual acceptance are introduced. In this section students learn and experience how to deal with arising problems during a change process. Therefore, several ideas for creating an interesting theory lesson are recommended. We present the structure of Part 4 in Figure 64. In the last Part 5, the subsequent change of replacing blueKiwi by Circuit as the next level of ESN technology is demonstrated, with all its opportunities, facets and inherent dilemmas. It concerns the integration of the Enterprise Social Network Circuit within Atos. Again, the change and meanwhile the situation are stated. As it is still an ongoing process, future perspectives and predictions are made and discussed. This section can also be accompanied by the recommended teaching methods. To deepen the knowledge or prepare the

content in advance, additional readings and background information are presented for all five parts of the lecture. We present the structure of Part 5 in Figure 65.

7.6.3.2 Part 1: Email

Situation
Complication
Teaching Methods
<u>Key Questions</u>
<u>Discussion</u>
Discussion 1: Email vs. Enterprise Social Network
Discussion 2: Make or Buy
<u>Role Play (small group methods)</u>
Role Play 1: Face-to-face Communication vs. Email
Role Play 2: Zero Email – Customer Advisor vs. Team Member vs. Communication Manager
<u>Live Questions (lecture hall methods)</u>
Background Readings

Figure 61 **Index of part 1 about email**

Source: Own illustration

7.6.3.2.1 Situation

Communicating via emails has facilitated the day-to-day work and contact with external partners, but also the collaboration within organizations. As organizational structures tend to be more flexible and teamwork gains higher significance nowadays, efficient communication takes on greater importance. Writing emails was the first step towards enhancing performance issues by creating an organization of collaboration and helpfulness. Therefore, Atos used emails to support business processes, to maintain customer contact and shorten internal decision paths etc. up until 2011.

7.6.3.2.2 Complication

Using emails is accompanied by misuse and mistakes made by the employees e.g. cc'ing emails unnecessarily. Increasing data transfer and the incorrect usage have led to unacceptable numbers of “unnecessarily” sent emails within the firm and therefore to a large amount of time being spent in order to structure the email inbox and the information within. If the time used for email management could be reduced, this would result in a decreased stress level of employees and a better working climate. Another reason for getting rid of emails is the generation changes taking place. The younger generation prefers other sources for communicating, mainly because constantly better communication and collaboration techniques are emerging. This phenomenon also occurred at Atos, wherefore Thierry Breton took action and announced the Zero Email initiative in 2011 with the ambitious goal of eliminating all internal email. To achieve this, communication and collaboration must be reallocated from conventional tools like email and telephone to a new social collaboration tool called blueKiwi.

7.6.3.2.3 Teaching methods

7.6.3.2.3.1 Key questions

To create an exciting and informative lecture, the students should be actively integrated. By asking inspiring and open questions, a good participation can be established. Furthermore, the learning environment is positively influenced, wherefore the taught subject matter will be effectively consolidated.

- Why is writing emails so ineffective?
- How can email traffic be minimized? What could an organization do?

7.6.3.2.3.2 Discussion

It is highly recommended to encourage a discussion among students. Talking and negotiation skills of students can be trained and new ideas and approaches can be developed.

Discussion 1: Email vs. Enterprise Social Network

The discussion Email vs. Enterprise Social Network shall raise awareness about the disadvantages that emails have compared to new more flexible and adaptable IT solutions. This is crucial for understanding the further developments within Atos, including the announcement of the Zero Email initiative which led to the introduction first of blueKiwi and then indirectly of Circuit. We present possible advantages in Table 51 and possible disadvantages in Table 52.

Advantages	
Email	Enterprise Social Network
Communication not only internally but also externally is easy as it is a worldwide standard and no additional downloads are necessary. This ensures quick and easy client responses.	Constantly better communication and collaboration techniques are emerging.
Sending emails is a cheap solution.	For each task, there is an individual solution that is more efficient than email (e.g. Wikis for persistent knowledge, Instant messaging for short and brief information).
Everybody knows how to send and receive emails. No additional trainings are necessary.	When implemented and used correctly, communication via ESN is faster than Email. This saves time for other tasks.
Emails do not require immediate attention (like instant messengers, telephone conferences).	Younger generations prefer new tools to emails.

Table 51 Email vs. Enterprise Social Network – Advantages

Source: BBC (2014) – Own illustration

Disadvantages	
Email	Enterprise Social Network
Misuse by using emails as a filing system in to manage knowledge. Structure of mail inboxes does not support this which makes structuring information difficult. Additionally, information is lost as soon as employees leave the company.	Initial and ongoing trainings may be necessary in order to ensure that all employees can use the ESN efficiently.
Misuse by using email as a collaboration tool. The process of collaboration via email is very inefficient because each change must be edited into a document separately and conflicting documents may collide.	Clients may not have access to the ESN without implementing it themselves. This would mean that client communication must be dealt with via email or the client must invest in the ESN access.
Misuse by using email as a communication genre which refers to email usage in group work. The context of the mail often is not clear at first sight, subject lines often ineffectively describe email content, irrelevant emails are cc'd and often sent from a sender perspective.	Finding the right ESN application can be very difficult as every company has different requirements concerning their communication methods and requirements for collaboration and communication.
Security issues: Viruses, Phishing attacks.	Implementing a new ESN can be very costly.
Spam emails can clutter the inbox.	
Confidential information can be easily shared (forwarded and cc'd).	

Table 52 Email vs. Enterprise Social Network – Disadvantages

Source: BBC (2014) – Own illustration

Discussion 2: Make or Buy

After deciding that a new IT solution needs to be introduced into a company the initial decision that must be made is whether to develop the tool in-house or whether to acquire an existing solution from another company. We present possible advantages in Table 53 and possible disadvantages in Table 54.

Advantages	
Make	Buy
Individuality of the solution is ensured. Especially when unique applications and functions are required.	No in-house expertise and resources needed.
Independency from the external developers. Failures can be fixed internally.	Business strategy: Sustaining partnership with relevant companies by using their product.

Table 53 Make or Buy – Advantages

Source: Cleverism (2017) and Galperin (2017) – Own illustration

Disadvantages	
Make	Buy
Make costs include development costs for staff and additional labor.	Buy costs include the price of the product.
Existing development capacities and in-house expertise needs to be available.	Hiring outside assistance to perform ongoing activities such as maintenance and updates. Failures cannot be fixed internally.

Table 54 **Make or Buy – Disadvantages**

Source: Cleverism (2017) and Galperin (2017) – Own illustration

7.6.3.2.3.3 *Role play (small group methods)*

This teaching methods encourages students to experience the taught theory by empathizing with different roles. The ability to negotiate, to speak in front of the class and to slip in own ideas can be extended. This teaching approach is suited for lectures with a small group of participants, because of the space needed for exercising and presenting.

Role Play 1: Face-to-face Communication vs. Email

Through this role play, students will actively experience discussions with various roles thinking differently. Some employees in an organization prefer face-to-face communication for example for scheduling meetings, discussions with the team or exchange of information. Others would rather write an email to speed up the process of communication. Both parties should think about advantages of their preferred communication method. In a talk, the students should try to explain why to communicate via email or face-to-face.

This role play will explain the conflict between Change Managers, who want to promote the change process, and the Middle Management, who often have concerns about change. In a discussion, both parties will explain why they think the change is good or bad for the company and should try to find a way to shape the future change process engaging both parties.

Role Description: Face-to-face Communication (2-3 students)

Employees who prefer to communicate face-to-face in personal meetings or on the corridor have several arguments for this method. In the following, some ideas to think about are listed:

- When is personal communication appropriate? E.g. meetings, team talks
- With whom is face-to-face communication necessary?
- Why is it better to meet staff members personally?

Role Description: Email Communication (2-3 students)

Several reasons plead for writing emails and not meeting physically. Several questions can be asked for preparing this part of the role play:

- In which situation is it appropriate to write emails?
- Why are personal meetings more cumbersome?

During the discussion, the students should get a feeling for communicating via email and of face-to-face personal communication. Both methods can be reasonable for different areas of application. Therefore, a general understanding when to use what should be developed.

Role Play 2: Zero Email - Customer Advisor vs. Team Member vs. Communication Manager

This role play should give a feeling of Zero Email and when it is appropriate. The initiative influences the various departments of an organization differently. Students should evaluate and experience when and why eliminating all emails could be boon and bane. The customer advisor thinks about external communication with customers, the communication manager wants to reach as many employees as possible with special events and news and a team member has to collaborate with his team.

Role Description: Customer Advisor (1-2 students)

As the customer advisor is in constant contact with external partners and customers, the communication method has to be adjusted to them. The following questions can serve as inspiration for brainstorming:

- When and with whom does the customer advisor have contact?
- What can be problems with zero emails within the organization?

Role Description: Team Member (1-2 students)

To discuss new ideas, to plan meetings and to efficiently work together, the team members need to be in contact with their team and their team manager. For the discussion, only consider internal communication (no external communication e.g. customer contact). Some ideas are listed below:

- Is it possible to communicate without emails?
- For which events could it be necessary to use emails?

Role Description: Communication Manager (1-2 students)

Communication managers have to reach as many employees as possible via all provided channels to spread internal news, events and messages. To get attention, the communication manager has to be creative to customize these information as appealing as possible. Some questions are mentioned to create an idea of the role:

- How can employees be reached best or most effectively?
- What role does email play within internal communication?

To conclude the role play, students of different roles should think about advantages and disadvantages of the Zero Email initiative to get an idea of potential problems. Finally, they should agree on how much email can be abandoned and in which department it is useful to do so.

7.6.3.2.3.4 *Live questions (lecture hall methods)*

Especially when the lecture is attended by many participants and held in bigger rooms, creating a lively and animating lesson is difficult. Nevertheless, integrating students during the lecture should be an important issue for every lecturer. Working with live questions is an option to achieve a similar good learning environment in bigger groups. Tools such as OnlineTED (<https://www.onlineted.de/>) support this teaching approach for bigger lectures. Questions can be theoretical but it is also possible to ask for some estimations. We provide some examples that can be used in class.

- Before the Zero Email initiative: How much email traffic were employees generating? In a week 300 Atos employees generated... (8 000 emails / 22 000 emails / 45 000 emails / *85 000 emails)
- Which was the main reason for the email overload at Atos? (unnecessary inbox structuring / *unnecessary sent mails / private mails / more work)
- Which form of communication do you prefer at work? (email / instant messaging / short meetings / notifications)

7.6.3.2.4 *Background readings*

Silic, M., Back, A., & Silic, D. (2015). Email: from zero to hero. *Journal of Information Technology Teaching Case*. (5), 84–91.

Ducheneaut, N. & Watts, L. (2005). In Search of Coherence: A Review of E-Mail Research, *Human-Computer interactions*. (20), 11-48.

7.6.3.3 Part 2: Theory block about change management

<p>Teaching Methods</p> <p><u>Classroom Participation</u></p> <p><u>Group Assignments</u></p> <p>Assignment 1: Change Management Models</p> <p>Assignment 2: Important Change Management Strategies</p> <p>Background Readings</p>
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Figure 62 Index of theory block about change management

Source: Own illustration

7.6.3.3.1 *Introduction*

To understand the Teaching Case, it is recommended to give background information about theories and research in Change Management. In section 7.3.1, important theory of Change Management is summarized to support a good understanding and learning. Starting with the definition and evolution, the theory part “What Is Change Management?” helps to understand the necessity of change and the management behind such change processes. Afterwards, Change Management models which made a significant impact on the topic are shortly described in “Introduction of Significant Change Management Models”. Models like Lewin’s three phases of change and Kotter’s eight-step process of creating major change form the basis and

are extended by Cumming's general model of planned change and Lippitt's seven phases of planned change. To take up the Teaching Case and its described changes, Atos' social collaboration lifecycle, Watzlawick's first- and second order change and Prosci's ADKAR model complete the selection of Change Management models. For successfully conducting and analyzing a change process, Change Management models can be used as template for organizational change. As nowadays organizational structures are more flexible, applying rigid theory is often the wrong way to shape the process of change. Therefore, a checklist as guidance can be gained by extracting all appropriate and necessary steps presented in these seven models. Its development and formulation can be found in the part "How to Ensure Successful Change". The checklist gives an idea and feeling of important criteria which should be fulfilled during change.

In the following, several teaching approaches are suggested supporting and consolidating the theory lectures about Change Management. As level of knowledge and experience can differ between classes, the length of the lecture can vary and different teaching methods will fit. Accompanying background readings are provided to deepen the knowledge.

7.6.3.3.2 Teaching methods

7.6.3.3.2.1 Classroom participation

The content will be discussed and is influenced by ideas of the students while teaching. It is not only the teacher's task to create the lecture, but also the student's role to take action and contribute to an exciting session. To achieve well-balanced participation, the teacher needs to integrate the students by asking inspiring questions or encouraging a discussion.

What is Change Management?

- What can be changed within organizations in general?
- Do you think change influences organizations' success positively?
- Is all change good?

Change Management Models

- Why can different steps during a change process facilitate achieving the goal?
- Do you think organizations should strictly adhere to the Change Management model they choose to follow?
- In which way can specific steps be interpreted?

How to Ensure Successful Change

- Do you think there is the one and only recipe for success of a change project?
- How would you want your supervisor to treat you during the change process?

7.6.3.3.2.2 Group assignments

Working in teams strengthens students' creativity and motivation. Dealing with the content of the lecture deepens the knowledge of the taught topics. By presenting the prepared assignments, the students learn to speak in front of the class.

Assignment 1: Change Management Models

Before the theory block starts, the students are assigned to several groups (3-4 students). Every group must create a presentation on a different Change Management model by using online research, visiting the university library, etc. Especially Lewin, Kotter, Cummings & Worley, Lippitt and Prosci are recommended. The teaching session on Change Management then begins with individual group presentations of each model (8-10 minutes), from there the teacher can take over.

Assignment 2: Important Change Management Strategies

After the theory block about Change Management, the students have to reflect on the content. In groups (3-4 students), they should think about important points during a change that should not be underestimated. To extract these criteria for successfully conducting a change project, students can compare the seven introduced Change Management models and think about frequently occurring points. Afterwards, a short presentation of each group and a discussion is recommended to compare the ideas. The “Checklist for Successful Change” (see Figure 49) offers possible solutions.

7.6.3.3.3 *Background readings*

Kotter, J.P. (1996). *Leading change*. Boston: Harvard Business School Press.

Lewin, K. (1947). *Frontiers in group dynamics. Field Theory in Social Science*, 143-153

7.6.3.4 Part 3: blueKiwi

<p>Change/Situation</p> <p>Complication</p> <p>Teaching Methods</p> <p><u>Key Questions</u></p> <p><u>Discussion</u></p> <p>Discussion 3: Stagnation in Change Projects</p> <p>Discussion 4: Requirement and Expectation Management</p> <p>Discussion 5: Comparison of blueKiwi Change and Change Management Models</p> <p><u>Role Play (small group methods)</u></p> <p>Role Play 3: Middle Managers vs. Change Managers</p> <p>Role Play 4: Enthusiastic blueKiwi User vs. blueKiwi Denier</p> <p><u>Live Questions (lecture hall methods)</u></p> <p>Background Information</p>
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Figure 63 Index of part 3 about blueKiwi

Source: Own illustration

7.6.3.4.1 *Change situation*

Atos pushed the Zero Email initiative forward by introducing the Enterprise Social Network blueKiwi internally. To achieve an overall acceptance and usage of the new tool among the employees, a change process needed to be conducted supported by Change Management.

Starting in 2012, Atos had to undergo several cultural shifts on the way to successful integration of blueKiwi. Main strategies to create a good adoption were sharing success stories as positive example for employees, developing a sense of urgency, giving trainings and tutorials, motivating managers to participate in change process, building an Ambassador Network and communicating via multiple channels. Initially the Zero Email initiative supported by blueKiwi appeared to be working, even though it did not reach the target of zero emails within the company. Nevertheless, because of the smart way of communication, larger and more flexible teams can be introduced to perform more complex projects. And also the easy transformation of knowledge and fast access to information, which is related to better project work, could be enhanced.

7.6.3.4.2 *Complication*

On the other hand, some problems occurred during and after the change process of introducing blueKiwi. Feedback loops were just barely started, reaction time to change requests was not as high as it should have been, the generation gap harmed a broad usage of the tool, discussions and negotiations with works councils were challenging and time consuming within a tight time line. In addition, the expectations for the new tool were too high from the start as Zero Email initiative was highly praised.

7.6.3.4.3 *Teaching methods*

7.6.3.4.3.1 *Key questions*

A positive learning environment, a strong team spirit and an interactive lesson create a higher creativity level, an increased desire to learn and a more relaxed session. To achieve this, inspiring questions can be integrated on several points of the lesson.

- What were the good strategies Atos pursued during the change process of the blueKiwi integration and what would you do (better)?
- Which steps can be improved concerning Change Management processes for future IT tool introductions?

7.6.3.4.3.1.1 *Discussion*

Through a lively discussion, new solutions of existing problems can be identified because of the promoted exchange of knowledge. Additionally, students will experience how to create an “organized” discussion by moderating the talk.

Discussion 3: Stagnation in Change Projects

Despite of a good adoption rate in the beginning of a change project, the change process can stagnate later on. In order to avoid this problem, it is important to analyze possible reasons for this stagnation.

Guiding questions for the discussion:

What are possible reasons for stagnation in a change process, especially when introducing a new communication tool?

- Frustration because of missing realization of feedback
- Limited number of users that are willing to accept the change
- Limited functionalities of the new solution

How can possible triggers for stagnation be identified beforehand and thus avoided?

- Learn from past experiences with similar change processes
- Develop a feedback system that enables early detection of possible problems
- Identify potential change resisters and engage them in the further development of the new solution

Must stagnation always be seen as a problem?

- If a certain level of adoption of the change is reached, stagnation is a normal phenomenon
- Stagnation can be interpreted wrongly, e.g. by defining unrealistic expectations beforehand
- Reaching and then maintaining a certain level of usage of a new tool can also imply the success of the new solution

Discussion 4: Requirement and Expectation Management

The needs of the users must be understood and translated into requirements. Then these requirements must be interpreted correctly according to the users' expectations.

Guiding questions for the discussion:

How can the user's expectations be interpreted correctly and implemented as such? Which steps must be taken to gain the relevant information from the user?

- Learn from the past approach of the customer in order to gain knowledge about their way of interacting with the system.
- Determine best practices in the given environment.
- Do not use technical terms when trying to elicit the requirements needed from the user.
- Talk to all actors that are going to use the system about the necessary functions of the tool.
- An Iterative review approach when implementing changes should be conducted.
- Detailed documentation about steps taken to develop tools allows a structured and fair approach.
- Pictures and screen mock-ups are helpful when determining what the user expects from the tool.

Additionally, balancing the expectations of users while trying to promote a new tool is difficult and challenging. Easily the promotion of a tool can lead to unrealistic expectations from the user side even though this never was intended. What is the right balance between announcing future improvements and not sharing them?

- Information should be shared step by step to prevent major disappointments when certain requirements cannot be met.
- Only promise what can be kept and develop a stable tool.

Discussion 5: Comparison of blueKiwi Change and Change Management Models

During the theory session, several Change Management models were discussed. As the change process during the introduction of blueKiwi is known as well, it can be compared and classified according to these theoretical models. It must not always be the best way to structure an organizational change process according to a theory, but it can be helpful. To prove if the blueKiwi change has something in common with steps extracted from Lewin, Kotter, Watzlawick, Atos' lifecycle, Cummings & Worley, Lippitt and/or Prosci, a debate can be conducted.

Following, Table 55 shows a possible solution with proof of several citations extracted from conducted interviews. Comparatively, the table with comparison of content of the seven described Change Management models in Table 37 can be used to think about steps during the blueKiwi change.

	Content-related aspects	blueKiwi change	Citations from the interviews
1	Establishing a sense of urgency and awareness	X	- "Within the Zero Email initiative, there were awareness trainings that helped showing the advantages and disadvantages of emails."
2	Identifying frame conditions (in-/external factors)		- no information
3	Ensure attention for the change		- no information
4	Implementation		- "One problem with the acceptance was the stability of the product." - "We had a couple of performance problems with the platform that scared of some colleagues at the beginning."
5	Emphasis on feedback on progress		- "blueKiwi had problems with too many Change Requests (within the internal feedback procedure) from different departments which should be integrated as a solution for everyone." - During the blueKiwi introduction we constantly had Lessons Learned sessions. And every time a project manager changed, we had proper Lessons Learned workshops."
6	Identifying crisis and opportunities		- no information

7	Developing a vision	X	<ul style="list-style-type: none"> - “The Zero Email tagline was good because it moved a lot internally and externally.” - “Zero Email was a good marketing medium for Atos.” - “The journey was a success concerning the effect it had internally and externally.”
8	Communicating the change	X	<ul style="list-style-type: none"> - “The change came from global. We practically only transferred the communication into our division.” - “Parallel to the trainings, there was a lot of communication. Not only from the program’s point of view, but also from the CEP and the individual service lines.” - “Communication was pushed top-down.”
9	Communicating advantages and feasibility	X	<ul style="list-style-type: none"> - “Within the Zero Email initiative, there were awareness trainings that helped showing the advantages and disadvantages of email.
10	Education: knowledge, skills, information access	X	<ul style="list-style-type: none"> - “There were multisteped trainings, beginner and advanced trainings as well as community leader trainings.” - “We started with community leader trainings, end-user trainings began later.” - “Next to the communication of trainings, we built an ambassador network with people that then also signed up as ambassadors for the projects.”
11	Changing systems or structures		<ul style="list-style-type: none"> - “We had to always offer alternatives.” - “We couldn’t say this is our new communication tool and this sit only tool we will be working with in the future. We always had to offer alternative tools.”
12	Nurturing the change process		<ul style="list-style-type: none"> - no information
13	Leading by example	X	<ul style="list-style-type: none"> - “Thierry Breton was a complete supporter of the Zero Email initiative and led as an example.” - “blueKiwi basically did not succeed because of the refusal of the works council to acknowledge the tool.” - “The council blocked the tool because of data security concerns.” - “The concept of communities is not liked by works council.” - The transparency of blueKiwi was not received well.” - “For the success, it is important that the middle management supports the initiative, not that it is simply the big vision of the top management.”
14	Examining the current market		<ul style="list-style-type: none"> - “The change came from global and we were the rollout team for Germany. But we didn’t have a lot of possibilities to adapt the process.”
15	Developing a master plan (milestones, ...)	X	<ul style="list-style-type: none"> - “It was not like the theories you learn at university. We had the task to introduce it and concentrate on trainings, best-practices and using communication on different channels.”

16	Strategy for achieving the vision	X	- "Change Management started before the introduction of the tool blueKiwi. blueKiwi is a part of Zero Email, and we started awareness trainings even before we started to introduce blueKiwi."
17	Empowering people, issue ownership (employees)		- no information
18	Finding Change Agents (internal or external), coaching	X	- "The ambassador network existed since the introduction of blueKiwi." - "Next to communication and trainings, we build an ambassador network from people that wished to be ambassadors for the project." - "Even though they were Zero Email ambassadors, they can be seen as blueKiwi ambassadors. It was their task to gain new users and motivate employees to use the tool. They inserted their knowledge, because the platform was supposed to be a knowledge platform where they posed questions and gave answers. They were supposed to support in a way that communication and training alone could not achieve."
19	Mental and financial support of organization	X	- "A bonus scheme is applied to reach the objectives." - "Sharing success stories was another way of promoting the initiative." - "To support that engagement, in 2013, 10% of a Top-700 leaders bonus was tied to the zero email campaign performance."
20	Ongoing training and communication	X	- "We still teaser topics weekly and link them to blueKiwi." - "Employees could take part in several trainings over the years."
21	Rewarding people creating "wins"		- no information
22	Anchoring new approaches in culture		- no information
23	Consider resources being committed		- no information
24	Using all communication channels	X	- "Parallel to the trainings, there was a lot of communication. Not only from the programs point of view, but also from the CEO and the individual business units."
25	Appliance of new methods /techniques		- no information
26	Celebrating successes		- no information
27	Continuous learning		- no information
28	Identifying and developing promoters fitting the vision	X	- "In blueKiwi, there were pioneers that enthusiastically fought for the vision, but in the end, their efforts were often vain."

29	Guiding coalition team building		- no information
30	Communicating the vision		- no information
31	Experimenting / pilot projects		- no information
32	Appraisal of past and former methods		- no information
33	Getting rid of obstacles		- no information
34	Consider (different) strategies for different groups		- "You cannot make employees that are older than 50, 45, maybe even 40 apply community thinking."
35	Evaluation of indicators / observation methods for change		- no information
36	Not denying mistakes and success		- no information
37	Creating understanding of failures / successes	X	- "During the introduction of blueKiwi, we had small Lessons Learned workshops, I would call them Lessons Learned sessions."
38	Special program must become daily routine		- no information
39	Determine whether standards have changed		- no information
40	Creating the desire for change		- no information
41	Develop appropriate and agreed timescale		- "It took longer than we expected."
42	Forcing people to change their behavior		- "Employees often did not use the tool because it was voluntary. This is why we never could reach the resisters."
43	Determining priorities of change project		- no information
44	Encouraging risk taking		- no information
45	Generating short-term wins		- no information

46	Integration of succeeding avenues of approach		- no information
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Table 55 Comparison of blueKiwi change with change management models

Source: Own illustration

7.6.3.4.3.1.2 Role play (small group methods)

Using role play within a class helps create deeper case insight and increases the student's commitment. The immersive character of role play enables students to view certain aspects from different angles. As a bonus, the students additionally train their discussion skills (E. Anderson & Schiano, 2014).

Role Play 3: Middle Managers vs. Change Managers

This role play will explain the conflict between Change Managers, who want to promote the change process, and the Middle Management, who often have concerns about change. In a discussion, both parties will explain why they think the change is good or bad for the company and should try to find a way to shape the future change process engaging both parties.

Role description: Middle Manager (3-4 students)

Middle Managers are not yet convinced of the whole change project concerning the integration of blueKiwi. Some concerns they have involve privacy issues and too much transparency in communication caused by the communities in blueKiwi. In the discussion, the Middle Managers want to make sure, that their concerns are treated seriously and that solutions will be found. In order to prepare for the discussion, Middle Managers should think about these questions:

- Which concerns do I have about the integration of blueKiwi and why?
- Which concerns do I have about the change process in general?
- What could be possible solutions?

Role Description: Change Manager (1-2 students)

Change Managers want to turn the change into success by planning and implementing a well-fitting Change Management. To overcome the blockade by the Middle Managers, they need to persuade them of the benefit of the change and get them engaged in the process. To achieve this goal, a Change Manager should prepare the following questions:

- How does the company, especially the Middle Management benefit from the change?
- Which concerns could the Middle Management have?
- How can I make sure, the Middle Managers are involved in the change process?

During the discussion, both parties should agree on how to shape the process and how they will be involved in the future change process.

Role Play 4: Enthusiastic blueKiwi User vs. blueKiwi Denier

Two worlds collide. Enthusiastic blueKiwi users appreciate all functions of the tool, the active collaboration via Enterprise Social Network and the exciting situation of experiencing the new. On the other hand, blueKiwi deniers dislike and resist the new tool. The effort and stress to change habits is not worth it.

Role Description: Enthusiastic blueKiwi User

Employees who are enthusiastic about the new Enterprise Social Network want to get to know all functionalities as soon as possible. They turn the communication method to good account for themselves as they know the advantages of the tool. The following questions can inspire the role:

- What functionalities of blueKiwi are the best and why?
- What are advantages resulting from the usage of the tool?

Role Description: blueKiwi Denier

The blueKiwi change does not only come along with positive effects. Some employees do not understand the sense of changing their habits. Possible reasons can be the fear of change and adapting something new, the fear of losing informational or expert power by sharing own knowledge, the missing sense of urgency or just refusing the tool because of its poor functionalities or interface. Below, some ideas are listed:

- What functionalities of blueKiwi are not adequate? Which ones are missing?
- What are advantages of the old communication method?

Concluding the discussion, the students should think about a solution to address both opinions and get an understanding of possibly arising problems during a change process. Not only the management is most important, but also meeting the internal requirements and employees' expectations of the introduced IT tool.

7.6.3.4.3.1.3 Live questions (lecture hall methods)

Creating a lesson for a large number of participants which is nevertheless exciting and interesting is not so easy. Tools such as OnlineTED (<https://www.onlineded.de/>) make such a lively lecture possible. All students can simultaneously answer theoretical questions or place a top for questions based on estimations. Another possibility to integrate most of the students is to create a competition (maybe rewarded with a prize) with such live questions.

- Which set of conditions describes an online community? (*people, interactivity, goals sharing and cyberspace / email forum, profile and call function / creativity, friends, networking and messaging / time reduction, instant sharing and collaboration)
- Which features are included in blueKiwi? (online work communities / public and private instant messaging / applications for mobile devices / *all of the above)

- Why are cultural shifts necessary? (to prepare the employees for new coworkers, *to change the employees' mindset, to build trust within the top management, they are not necessary)

7.6.3.4.4 *Background Information*

We provide an overview of the blueKiwi product in section 10.4 which we retrieved 05.07.17, from <https://bluekiwi.io/product-2/>

7.6.3.5 **Part 4: Theory block about innovation diffusion theory and technology acceptance models**

<p>Teaching Methods</p> <p><u>Classroom Participation</u></p> <p><u>Group Assignments</u></p> <p>Assignment 3: Adopter Categories</p> <p>Assignment 4: IT Diffusion Framework</p> <p>Assignment 5: Theories to Explain Individual Acceptance of IT Systems</p> <p>Background Reading</p>
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Figure 64 Index of theory block about diffusion theory and technology acceptance models

Source: Own illustration

7.6.3.5.1 *Introduction*

After experiencing problems which can occur during a change process (e.g. no sense of urgency, employees refusing trainings), it is highly important to understand why they arise. Only by knowing the origin of the complication, managers can counteract. The Diffusion Theory gives a general understanding of the adoption of IT tools, wherefore this theory block should be particularly stressed. Starting in section 7.3.2 Innovation Diffusion Theory, the principles of Diffusion of Innovations are introduced to better understand whether Diffusion Theory can explain potential problems in change projects. First of all, an “Introduction to Diffusion Theory” is written to create a short overview of Roger’s research and the aim of his theory. In the part about the “Rate of Adoption” several influences are defined as it is the main element of the theory block. Afterwards, “Innovativeness and Adopter Categories” are presented including the adoption / innovation curve with the innovators, early adopters, early majority, late majority and laggards. The adoption of innovations over time will be covered in “S-Shaped Curve”. “Theoretical Biases” are shortly mentioned for the sake of completeness. To reflect reality as good as possible, the “The Dominant Paradigm and IT Innovation” describes all important perspectives as models based on it usually work well. Afterwards, IT innovations can be classified with the aid of the “IT Diffusion Framework”. Its two categories are locus of adoption and class of technology. To conclude this theory part, a summary of technology acceptance models to describe change projects is given in the section 7.3.3 Technology acceptance models. Students learn the basics of the task-technology-fit model (TTFM), the technology acceptance model (TAM) and the unified theory of acceptance and use

of technology (UTAUT). A broad overview about the diffusion of information systems on an organizational level and the individual acceptance and adoption of IT systems is given.

Several ideas for understanding and deepening the theory part about Diffusion Theory and further individual adoption theories are listed below. It is recommended to select approaches which fit the students' knowledge and experiences. Additionally, further readings containing background information are suggested at the end of this part.

7.6.3.5.2 Teaching methods

7.6.3.5.2.1 Classroom participation

To create a lesson which serves students' and teacher's expectations and wishes could often be a challenge. Therefore, it is important to integrate the students' ideas and discussions. To encourage an interactive talk, several questions should be provided to inspire and challenge the students.

Can Diffusion Theory Explain Potential Problems in Change Projects?

- What can be problems emerging during a change?
- Which types of people accepting or refusing change can you imagine?
- Do you think culture, age and sex can influence the ability and motivation to accept change?
- How could the Diffusion Theory explain failure of change projects despite well-planned Change Management?
- Despite convincing functionalities of information systems, problems of individual acceptance can remain. Which reasons can be found based on the TTFM, the TAM and the UTAUT?

7.6.3.5.2.1.1 Group assignments

Group work helps students to develop presentation and teamwork skills. By recapping the lecture indirectly, the taught content will be consolidated and creativity is encouraged.

Assignment 3: Adopter Categories

After the theory block about Diffusion Theory was held, students are assigned in groups (3-4 students). The task is to think about the different adopter categories with regard to Enterprise Social Networks as innovation. Every group must think about employees classified in one of the adopter categories and their reasons for supporting or discouraging the new innovation. Short presentations should be prepared (2-4 minutes) to show developed ideas and afterwards discuss them with the whole class.

Assignment 4: IT Diffusion Framework

After theory is taught, students are arranged into groups (3-4 students). As the IT Diffusion Framework was presented, they should be able to classify various innovations within the four categories. Suggested products are microcomputers, laptop computers, personal computers, database management systems, information technology, PC graphic software and spreadsheet software. The paper of Fichman (1992) can be used for additional ideas of innovations and

solutions of the suggested ones based on research. It is important that the students discuss about and get in touch with the framework. A short presentation (2-4 minutes) of the outcomes can trigger a discussion within the class.

Assignment 5: Theories to Explain Individual Acceptance of IT Systems

This task can be completed after the theory section about further models for analyzing and planning technical change projects. Starting with assigning students in groups (3-4 students), the teacher continues with assigning every group to one of the discussed models (TTFM, TAM or UTAUT). Each group should discuss if their model is valid for the introduction of Enterprise Social Networks and how strong the impact of the individual factors of the model is. In addition, each group member should think about his/her own acceptance and attitude towards new Information Systems. Afterwards, short presentations can help the students to understand different opinions on acceptance of IT systems and trigger discussions within the class.

7.6.3.5.3 Background Readings

Rogers, E. M. (2003). *Diffusion of Innovations* (5th ed.). New York: Free Press.

Samaradiwakara, G. D. & Gunawardena, C. G. (2014). Comparison of existing technology acceptance theories and models to suggest a well improved theory/model. *Information Technical Sciences Journal*. (1 1), 21–36.

7.6.3.6 Part 5: Circuit

<p>Change/Situation</p> <p>Future</p> <p>Teaching Methods</p> <p><u>Key Questions</u></p> <p><u>Discussion</u></p> <p>Discussion 6: Comparison of blueKiwi Change and Circuit Change</p> <p>Discussion 7: Lessons Learned</p> <p><u>Role Play (small group methods)</u></p> <p>Role Play 5: Change Manager meets blueKiwi Users and Circuit Users</p> <p>Role Play 6: Ambassadors vs. Reluctant Users</p> <p><u>Live Questions (lecture hall methods)</u></p> <p>Background Information</p>

Figure 65 Index of part 5 about Circuit

Source: Own illustration

7.6.3.6.1 Change situation

Because of the problems with stagnation and arising resignation during the blueKiwi change, Atos decided to integrate another new Enterprise Social Network called Circuit. Its numerous functions for interaction between employees and team members further support the reduction of redundant and unnecessary messaging. To integrate Circuit into the existing Atos environment a gradual integration process was planned that built on the change initiatives that had already been invoked during the initial blueKiwi change process by analyzing the change

thoroughly and implementing successful steps from the past. Several phases followed, starting with the Proof of concept phase in which the planned Change Management was tested and evaluated with the help of Early Adopters. Additionally, the Ambassador network was revoked to support local networks. During the second phase, each Atos employee received a Circuit account and a feedback process was implemented in order to improve the functionalities of the tool. In the last phase adoption was ensured by training sessions, use case courses and communication. During this phase, top management discussion will determine the future of the tool. In the future other applications will be shut down which will increase the pressure on the tool.

7.6.3.6.2 Future outlook

As the integration of Circuit is an ongoing process, it is hard to say, how successful the integration will turn out for Atos and its employees. With its functions and features, the tool has the potential to become the main way of communication in the company. And as the Change Management is influenced by learnings of the previous integration process, the Circuit integration could become a success. But there are still some problems that could hinder the successful integration of Circuit. After starting and getting used to work with blueKiwi only few years ago, some employees might not be willing to get used to another Enterprise Social Network again. This can be especially difficult for employees who are not very open to innovation. Another problem could be dissatisfaction with the decision to shut down Skype for Business and only use Circuit instead. This decision is also critical as it might be impossible to completely switch to Circuit, for example when communicating with external business partners not using Circuit. In order to succeed in the integration of Circuit it is also important, to have a look at requirement and expectation management. Employees have their own expectations and hopes e.g. regarding specific functionalities of the tool. In case these expectations cannot be fulfilled and some basic requirements are missing, the tool will not be adopted by employees.

But keeping these potential problems in mind and managing them during the process, the whole integration of Circuit can become very successful, making Circuit the last missing puzzle piece to reach the goal of Zero Email.

7.6.3.6.3 Teaching methods

7.6.3.6.3.1 Key questions

In order to integrate the students so that the lecture can be created and held interactively, asking inspiring questions should be taken into account. Being an active part of the session positively influences students' desire to learn and understand. Therefore, teaching is easier and more effective what creates a better team spirit and increased creativity.

- Did the blueKiwi change process influence the plan for the Circuit change process sufficiently?
- Considering both change projects at Atos – what are main points for successfully implementing change?

7.6.3.6.3.1.1 Discussion

To develop students' skills in discussing and negotiating, the taught content should be recapped by creating talks about controversial topics. New ideas can be developed to push research forward.

Discussion 6: Comparison of blueKiwi Change and Circuit Change

This discussion covers a comparison of both change processes based on the content-related rating of the seven introduced Change Management model. To effectively conduct this task, discussion 5 has to be successfully completed. It works as the foundation for the comparison of the blueKiwi change process (view Table 55) and the Circuit change process. A solution is given in Table 56.

	Content-related aspects	Circuit change	Citations from the interviews
1	Establishing a sense of urgency and awareness		<ul style="list-style-type: none"> - "Using Circuit is very different to using blueKiwi. I think most people are not aware of this circumstance." - "I believe that even hardcore blueKiwi users are going to be disappointed about the Circuit functionalities." - "People are not happy with the fact that everything will be changed over to Circuit and that many functionalities will be lost in the process." - "Nobody needs to be convinced because the tool is self-explanatory." - "Expectation management is especially important for the future success of the integration."
2	Identifying frame conditions (in-/external factors)	X	<ul style="list-style-type: none"> - "We are building upon the experiences we made with bluekiwi."
3	Ensure attention for the change		<ul style="list-style-type: none"> - "Circuit is being less promoted than blueKiwi." - "There is no hype like there was with blueKiwi."
4	Implementation	X	<ul style="list-style-type: none"> - "The implementation is technical and guided by a Change Management implementation plan." - "Product marketing or the quality of the explanation of the product category will be main success factors during the rollout." - "The tool is running more stable than blueKiwi did back in that day."
5	Emphasis on feedback on progress	X	<ul style="list-style-type: none"> - "Aim of the first phase was to evaluate if all necessary services are functioning correctly and that the tool can be applied within the Atos infrastructure." - "Circuit developers listen to the ongoing feedback of the users and prioritize ideas."
6	Identifying crisis and opportunities	X	<ul style="list-style-type: none"> - "There will probably be a couple of Circuit changes that the councils and employees won't like."

7	Developing a vision	X	<ul style="list-style-type: none"> - “There won’t be a big change within the work philosophy compared to blueKiwi.” - “Back that day, Thierry Breton made a clear statement concerning the developments within Atos through the Zero Email initiative. This shows the people how things are supposed to go.”
8	Communicating the change	X	<ul style="list-style-type: none"> - “In our newsletter we had an article where we redirected people to all the trainings and materials.” - “There was a lot of communication during the blueKiwi change, this has changed for Circuit.” - “There is communication in all directions”.
9	Communicating advantages and feasibility	X	<ul style="list-style-type: none"> - “I don’t know how to transfer the communication I do with blueKiwi into Circuit.” - Within the change and communication process, specifically the openness (community thinking) and that we have a platform that is better when it comes to stability, scalability, etc.” - “It is extremely important to explain the product category well within the change and communication process, because the category is new on the market.”
10	Education: knowledge, skills, information access	X	<ul style="list-style-type: none"> - “Trainings are within the work time and for free.” - “There will be trainings, use case based trainings, use case based videos and heightened communication towards the users.” - “We are on a knowledge sharing route, which was partly adapted by other GBUs, too.” - “At the moment we are in a phase, where we offer much training.”
11	Changing systems or structures	X	<ul style="list-style-type: none"> - “Other services from blueKiwi will be switched off after a certain amount of time.”
12	Nurturing the change process	X	<ul style="list-style-type: none"> - “The concept to build up knowledge leads to a reduction of bottlenecks, because the users can help themselves in a positive way.”
13	Leading by example	X	<ul style="list-style-type: none"> - “We forgot to integrate the councils right from the start which stopped us from rolling out further performance features.” - “An ambassador network is being built.” - “Involving the councils is going really well. We do not have any binding agreements yet but are tolerated and have temporary agreements.”

14	Examining the current market	X	<ul style="list-style-type: none"> - “We see that the market is developing for stand-alone Enterprise Social Networks. I think they will disappear.” - “I see that the whole market will develop in a way that doesn’t favor Enterprise Social Networks, but does favor collaborative, team-oriented tools.” - “The problem with blueKiwi was that it could do everything. But nothing at 100%. There is no market for such a swiss army knife tool.” - “To prevent repeating former mistakes it is important to think market-oriented.” - “The market is changing at the moment.” - “We need to objectively see what the market needs and how can we be successful on the market. Not how I as an Atos employee can integrate my personal favorite features in Circuit.”
15	Developing a master plan (milestones, ...)	X	<ul style="list-style-type: none"> - “Change Management definitely exists. There is also a team that takes responsibility for the project.”
16	Strategy for achieving the vision	X	<ul style="list-style-type: none"> - I am not concentrating on the ambassador network. The focus is to convince the management.”
17	Empowering people, issue ownership (employees)	X	<ul style="list-style-type: none"> - “It is important for me that employees receive a positive access to the tool through the trainings.”
18	Finding Change Agents (internal or external), coaching	X	<ul style="list-style-type: none"> - “We trained so-called evangelists.” - “There are early adopters, not specifically from the tool but more from the way of communication, that should be applied.” - “This time we built a global ambassador network.” - “This time we neglected the ambassador network in Germany a little, because we had a huge call for ambassadors just three years ago. Because of this, the topic is a little tiring. Not every ambassador was happy that we again changing the tool and want new people.”
19	Mental and financial support of organization		<ul style="list-style-type: none"> - no information
20	Ongoing training and communication		<ul style="list-style-type: none"> - no information
21	Rewarding people creating “wins”		<ul style="list-style-type: none"> - no information
22	Anchoring new approaches in culture		<ul style="list-style-type: none"> - no information
23	Consider resources being committed		<ul style="list-style-type: none"> - no information

24	Using all communication channels	X	<ul style="list-style-type: none"> - “We have different ways we can present information, classically in written form, but we are using more and more video material such as interviews with statements.” - “We use different channels so that we don’t always have to communicate top-down.” - “We have to work towards reaching people from different communication channels. That hopefully works much better than a couple of years ago with blueKiwi.”
25	Appliance of new methods /techniques		<ul style="list-style-type: none"> - no information
26	Celebrating successes		<ul style="list-style-type: none"> - no information
27	Continuous learning	X	<ul style="list-style-type: none"> - “The Zero Email message, to say that a wiki-based tool can replace email, doesn’t work.” - “We made sure that the staff that supported the introduction of blueKiwi are on board again. Their knowledge and resources are committed to the Change Management process for Circuit.” - “They compared which performance features are in blueKiwi and which performance features are in Circuit. Where are shortcomings and where are the benefits of both products.” - “Circuit is continuously being improved and developed further.” - “It is important to focus on the reaction time during the development especially during the introduction of the tool when user experience meets the users’ expectation. Can the developers react quickly or is that a problem.” - “What we learned for Circuit is that we should not promise too much concerning the product. But if we promise something we should make sure to keep our promise.” - Wit is better to promise less but keep that promise, than to promise a lot but not be able to keep them. That was one of the key learnings.” - “We still have the same people working on the product; every time people change we do a Lessons Learned session.” - “We are building up knowledge about what we did well and what we did bad.”
28	Identifying and developing promotors fitting the vision		<ul style="list-style-type: none"> - no information
29	Guiding coalition team building		<ul style="list-style-type: none"> - no information

30	Communicating the vision	X	<ul style="list-style-type: none"> - "It is incredibly important to explain the product category well during the communication and change process." - "It is important to communicate what the product is during the communication and change process." - "We are more capable of following and communicating the vision." - "We are not only showing the features like we did during the blueKiwi introduction."
31	Experimenting / pilot projects	X	<ul style="list-style-type: none"> - "During the proof of concept phase we let 1000 user use the Circuit platform as early adopters. From the beginning, we positioned them as regional contact persons for people who will later join the platform." - "Last spring we did a 'global live test' for about half a year with a five digit number of people."
32	Appraisal of past and former methods	X	<ul style="list-style-type: none"> - "We will transfer the core use-cases from blueKiwi into Circuit." - "In autumn, the use cases from blueKiwi will be available in Circuit, but not everything will be replaced completely." - "What we will introduce is a Circuit bot, that will enable users to receive information from blueKiwi within Circuit." - "A lot of previous mental change will help that Circuit will not be perceived as a disruption, but a continuation of the former change process. We had the Zero Email aspiration already in blueKiwi." - "Essential knowledgeable employees that participated in the blueKiwi change process will continue working on the Circuit change."
33	Getting rid of obstacles	X	<ul style="list-style-type: none"> - "I think as soon as Circuit and Skype do not run parallel anymore, the Circuit usage will increase exponentially. At the moment we are in a waiting process." - "blueKiwi will be shut down."
34	Consider (different) strategies for different groups	X	<ul style="list-style-type: none"> - "We had different training concepts for different Personas with different learning types." - In a global company like Atos, there are different philosophies within the different regions concerning the communication." - "There is a global training concept. But in the end it is up to the 'regional lead ambassadors' to interpret it."
35	Evaluation of indicators / observation methods for change		<ul style="list-style-type: none"> - "In some countries there is a corresponding tracking for ambassadors, but not in Germany."
36	Not denying mistakes and success	X	<ul style="list-style-type: none"> - "Functions that customers praised as especially valuable within blueKiwi will be integrated during the development of Circuit."
37	Creating understanding of failures / successes	X	<ul style="list-style-type: none"> - "The experience that Atos made during the introduction of blueKiwi and the learning curve that was gained from it now flows into the introduction of Circuit."

38	Special program must become daily routine		- no information
39	Determine whether standards have changed		- "I see that the whole market is changing, not in favor of Enterprise Social Networks but in favor of collaborative, team-oriented tools."
40	Creating the desire for change		- no information
41	Develop appropriate and agreed timescale		- no information
42	Forcing people to change their behavior	X	<ul style="list-style-type: none"> - "As soon as Circuit becomes mandatory and 'former communication tool' is gone, there will be a huge wave." - "There will be a clear timeline when the 'former communication tool' will be shut down." - "The 'former communication tool' will be shut down." - "The advantage during the Circuit introduction compared to blueKiwi is that the alternative too, 'former communication tool' will be shut down. This means that colleagues are forced to change to Circuit."
43	Determining priorities of change project		- no information
44	Encouraging risk taking		- no information
45	Generating short-term wins		- no information
46	Integration of succeeding avenues of approach		- no information

Table 56 Comparison of blueKiwi change and Circuit change
Source: Own illustration

Discussion 7: Lessons Learned

Through a lively discussion about both change processes, the introduction of blueKiwi and the integration of Circuit, students get an idea of analyzing and comparing Change Management to learn for future projects. To integrate Lessons Learned of earlier changes into further changes can facilitate the process and management and reduce the risk of failure. Similarities concerning the Change Management of both processes should be discussed and considered if they are random or planned. To support the discussion, some ideas are given below:

- Think about similarities of both changes as a whole. Do they have same steps, same time spans or same people involved etc.?
- What about extremely opposite strategies?

- Go in detail. What actions/strategies were realized to conduct the blueKiwi change? What projects supported the Circuit change?

Try to analyze why there are similarities or contradictions. During blueKiwi change, did the detected steps create severe problems or did they work exceptionally well?

7.6.3.6.3.1.2 Role play

Teaching the content by using role plays helps students to experience the learned and creates a better understanding of interaction between theory and practice. Discussion and social skills can be trained as well. This teaching approach is especially appropriate for smaller courses.

Role Play 5: Change Manager meets blueKiwi Users and Circuit Users

In this role play, the students will take on the roles of Change Managers, blueKiwi users and Circuit users. As functionalities of both tools blueKiwi and Circuit will be combined in the future, the different users will have to adapt to a change. In order to manage this change successfully and guarantee the satisfaction with the new solution, a Change Manager wants to meet blueKiwi users as well as Circuit users. He wants to discuss what the future solution will look like and how it can be successfully integrated into the company, with both parties being willing to accept and engage in the change process.

Role Description: Change Manager (1-2 students)

The Change Manager wants to mediate between both parties. His job is to develop a plan for the Change Management that fits the users of both applications. In order to develop such a successful plan, the Change Manager has to address the emotions of both user groups and make sure they are both happy with the suggested solution. The Change Manager should be able to provide answers to the following questions:

- How can I make sure that both parties feel equally important?
- What can the Change Management look like? Which steps have to be taken?
- How can I ensure the support of both parties for the new solution?

Role Description: blueKiwi User (2-4 students)

blueKiwi users are very passionate about their application. They have a clear vision of which functionalities they want to keep in the future solution. During the discussion, the blueKiwi users want to ensure their involvement in the change process and their interests. To prepare for the discussion, blueKiwi users should think about the following questions:

- What do I like about blueKiwi and why?
- Which functions can be dismissed and why?
- How should the final solution be designed to be useful for former blueKiwi users?

Role Description: Circuit User (2-4 students)

Circuit users are just as passionate about Circuit as blueKiwi users are about blueKiwi. They want to assure that their favourite functions will be part of the combined solution. It is also important to Circuit users to be an active part of shaping the change process, so that they can

easily adapt to the new solution. Circuit users should prepare answers to the following questions for the discussion:

- What do I like about Circuit and why?
- Which functions can be dismissed and why?
- How should the final solution be designed to be useful for former Circuit users?

In a discussion, the students are supposed to agree on a solution and most importantly to develop a plan for Change Management that involves and satisfies all parties.

Role Play 6: Ambassadors vs. Reluctant Users

Ambassadors play a key role within the Atos Change Management processes. For the students to understand the role of the ambassadors within the change process and the difficulties they must overcome, we advise conducting a discussion. The class needs to be divided into two groups. The first group is the group of initially reluctant employees that will undergo the adaption process and need to be convinced of the necessity for change; the second group is the group of Ambassadors that need to convince the employees. Before the discussion, both groups should internally develop a strategy for their role and think about what they want to achieve. Afterwards, both groups come together and try to find common strategies as to how employees can be effectively motivated and integrated.

Role description: Ambassador (1-2 students)

Ambassadors need to convince the employees of the new tool that will be introduced to Atos. They need to transfer the necessity of the new tool and make the employees believe in it. Not only are the employees supposed to use the tool, but ideally, they should actively support the whole Change Management process. Ambassadors need to think about how employees can be motivated e.g. by different training methods, by information videos, workshops, etc. For the preparation of this role the students should consider the following questions:

- Why is the new tool necessary and what are its advantages?
- What are the methods that need to be applied to convince the employees?
- Which communication channels need to be utilized and which messages must be conveyed? What are the relevant target groups?
- How must I address the employees feeling towards former methods and tools?

Role description: Employee (2-4 students)

The employees at Atos need to think about which steps would be necessary in order to convince them of the new change process. In day to day business, adopting a new tool is not easy as the employees must disrupt their routine in order to learn about the new tool. Employees have to agree on when and under which conditions they would accept the change.

- Which barriers do I have when it comes to the adoption process (time issues, motivation issues, ...) and which points cannot be compromised on?
- Which steps are necessary to convince me?

- Which steps might be difficult to integrate into day to day life?
- How much effort is necessary to convince me?

The aim of the discussion is to find the best compromise between Ambassadors and employees.

7.6.3.6.3.1.3 Live questions

Students should be integrated in the lecture as actively as possible. Achieving an animated learning environment and addressing every single participant in big courses is often very hard. OnlineTED (<https://www.onlineted.de>) is a web tool for asking live questions to many people simultaneously. As a result, students can test their knowledge about the taught topics.

- Why is Circuit integrated into Atos? (another step towards the goal Zero Email / enhanced daily communication between employees / providing several functionalities blueKiwi does not provide / *all of the above)
- What is the main goal of Circuit? (writing internal emails / *enhancing real-time communication / simplifying customer contact / providing a knowledge sharing database)

7.6.3.6.4 Background information

Unify (2016). Circuit – the better way to work. Retrieved July 05, 2017, from <https://www.circuit.com/learn>.

8 Conclusion

This thesis presents novel, comprehensive and meaningful insights on the impact of Enterprise Social Networks (ESN) on organizations. Based on a mixed method research approach, we create conceptual clarity, identify and explain archetypes of ESN users, quantify the value contribution of ESN use, investigate impacts of social communication on executives and craft a change management curriculum. We contribute to the theory of adoption, diffusion and value contribution of ESNs. For practice, we provide foundations, guidelines and instruments of ESN governance.

We start by providing a summary per study in tabular format in the subsections 8.1, 8.2, 8.3, 8.4 and 8.5. Subsequently, we conclude by stating the overall theoretical and practical implications as well as the overall limitations of the results of this thesis.

8.1 Summary of study 1 – State of the art on ESNs

Purpose Research proposes a vast variety of definitions of what ESNs are. Our literature review process outlines that a clear and unified definition of what ESNs actually are is missing.

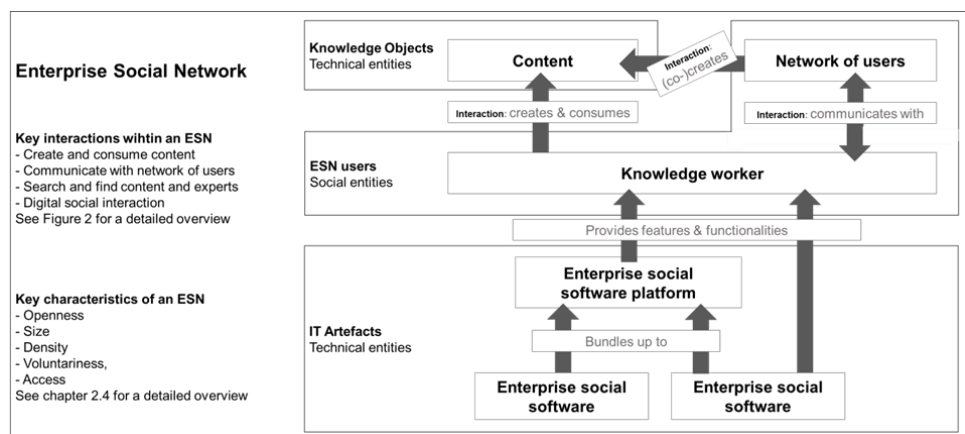
Methods Literature review, conceptual deductive analysis, model building.

Findings A summary on the conceptual background of ESN research.

A definition of what ESNs are: *“ESNs allow social entities—corporate knowledge workers represented by avatars—to interact with knowledge objects and other social entities. ESNs are differentiated by their collaboration affordances, technological features, and functionalities, and their level of voluntariness, openness, accessibility, size, and network density”*.

A framework that explains the elements, relations and interactions within ESNs.

Key figure



The ESN framework and its entities, as presented in Figure 10.

Theoretical implications We provide orientation within the field of ESN research in two ways: Conceptual clarity on the term and research object ESN by refining and bringing together the definitions published by D. Richter et al. (2011), Leonardi et al. (2013), Herzog et al. (2013).

A framework to anchor ESN research concerning elements, relations and interactions within ESNs. This is essential to compare current and future research.

Practical implications A framework to better understand, distinguish and compare the features and functionalities of commercial ESN solutions.

Study limitations Findings result from investigating two commercial ESN solutions within one large multinational organization (2013-2018). We suggest revisiting the results and validating the introduced framework by the scientific community to understand whether the framework can anchor ESN research as intended.

8.2 Summary of study 2 – The adoption and diffusion of ESNs

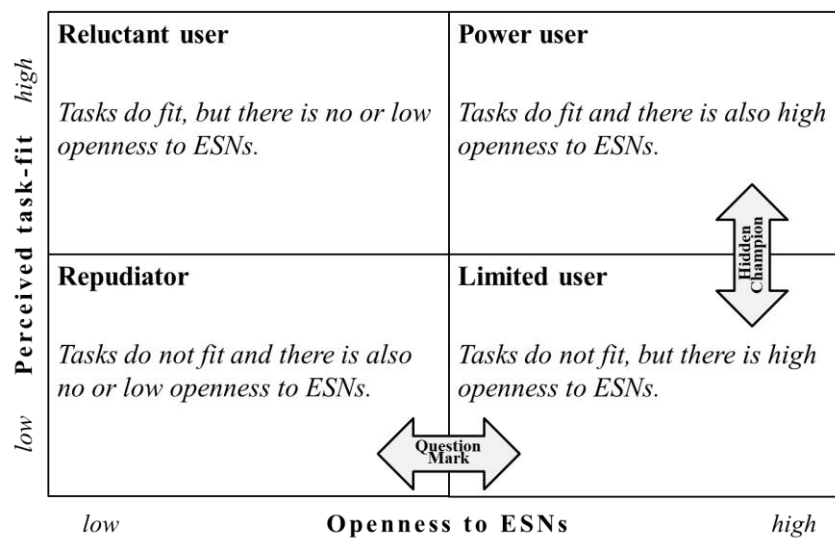
Purpose Even if ESNs are implemented in organizations, their value contribution appears unclear and the ESN utilization intensity develops not as fast as expected. Thus, we investigate reasons for the actual ESN use or ESN non-use of employees.

Methods Literature review, case study, expert interviews (n=28), conceptual deductive analysis, empirical inductive analysis, model building.

Findings A framework that characterizes six different archetypes of ESN users and explains their utilization intensity.

An overview on perceived drivers and barriers of ESN adoption. Main drivers of ESN use are *high business-related task support; when the ESN enables new and more efficient methods of collaboration; enhanced meta knowledge; improved expert search*. Main barriers are: *If the ESN is not an exclusive tool, voluntary and unrestricted usage, limited business-related task support, lack of acceptance within the firm, lack of trust and uncertainty in usage*.

Key figure



The archetypes of ESN users as presented in Figure 12.

Theoretical implications

The study extends the discussion on user typification of Rogers (2003) Velasquez et al. (2014) Jahnke (2010) in the context of ESNs. Except for an obvious link in their dominant usage type (active/passive), characteristics of archetypes do not indicate a link to certain roles in any kind of community of practice as described in literature (Jahnke, 2010; Velasquez et al., 2014). Our findings contribute to technology acceptance theory (Fred D Davis, Bagozzi, & Warshaw, 1989; Goodhue & Thompson, 1995; Venkatesh et al., 2003; Venkatesh & Bala, 2008) by using TAM constructs, such as computer self-efficacy, long-term consequences, subjective norm, job relevance, etc., to investigate ESN use. Furthermore, characteristics of archetypes did not indicate a link to a conflict of interest and incentives of ESN users (Orlikowski, 1992). The rather passive usage of ESN users indicates accordance with the premise that a small minority does most of the work in social networks and online communities (Okoli et al., 2014; Preece & Shneiderman, 2009).

Practical implications

Based on the interview guide, the personality test and the coding scheme, our model allows organizations to analyze their workforce and generate a kind of ESN-readiness-profile that allows the organization to take concrete measures per archetype to increase ESN acceptance and actual utilization intensity.

Study limitations

We choose investigating ESN users on a general company level to generate results that are not deviated by potential specifics of an IT company. Furthermore, we show that results are not deviated by the specifics of the investigated ESN. We conducted interviews until the last three interviews did not reveal new aspects. We carefully crafted our interview guide to mitigate a “social desirability bias”.

8.3 Summary of study 3 – The value contribution of ESNs

Purpose The value contribution of ESN use appears unclear and existing studies rely on perceived benefits and drawbacks of individuals instead of empirical findings.

Method Literature review, field experiment (n=156), survey, conceptual deductive analysis, model building.

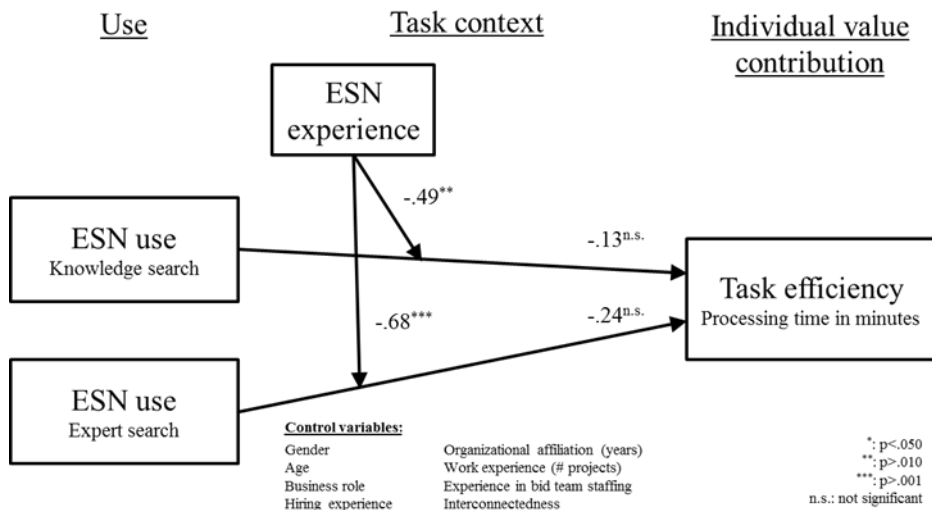
Findings ESNs are not a natural! ESN use does not have a direct significant positive effect on task efficiency. ESN experience changes the relationship between ESN use and task efficiency to become significantly related positively. We found that learning effects are decisive. Through the moderating effect of ESN experience, we showed that employees need to be trained and enabled, they need to become familiar with ESNs to become more efficient than they are in prevalent information systems.

An instrument to quantify the value contribution of ESN use.

We highlight the relevance of ESN experience to solve the chicken and egg dilemma of adoption (employees experience a derogation of task-efficiency and stop using the ESN before ESN experience is built, which again is the trigger to significantly benefit from ESN use).

ESN experience outperforms interconnectedness as a predictor for employee performance.

Key figure



Hypotheses:

- H1a: (✗) Using an ESN for knowledge search has a positive effect on task efficiency.
- H1b: (✗) Using an ESN for expert search has a positive effect on task efficiency.
- H2a: (✓) Experience positively moderates the positive effect of using an ESN for knowledge search on task efficiency.
- H2b: (✓) Experience positively moderates the positive effect of using an ESN for expert search on task efficiency.

The results of testing the hypotheses of study 3 as presented in Figure 24.

Theoretical implications

With our findings, we entitle research to take the next step and ask: Does the knowledge about the significant positive effect of ESN use on task efficiency when moderated by ESN experience lead to increased adoption and utilization intensity of ESNs? Thereby we contribute to technology acceptance theory (Fred D Davis, Bagozzi, & Warshaw, 1989; Goodhue & Thompson, 1995; Venkatesh et al., 2003; Venkatesh & Bala, 2008).

We answer to the request in the discussion around measuring the value of IT in general (DeLone & McLean, 2003; Schryen, 2013) and for ESNs in particular (Herzog et al., 2014; Williams et al., 2013). By combining the work of C. Cooper et al. (2010), DeLone and McLean (2003), Gattiker and Goodhue (2005), Herzog and Richter (2016), Krcmar (2015), Venkatesh and Bala (2008), we add a novel, courageous but theory-centered and thus transparent experimental setup to theory.

Practical implications

We provide facts, arguments, and methodology that impact organizational development, change management and expectation management associated with the implementation of ESNs. A major practical implication is the need for thorough training and communication to make sure that employees become familiar with ESNs to leverage the positive effects of ESN use.

The simple but powerful use-case based experimental setup allows organizations to repeat the experiment to thereby analyze and evaluate their ESN investment.

Study limitations

Although the sample is carefully selected to represent an industry independent organizational setup, we suggest verifying the results through future research with the addressed use cases, but also by testing additional use cases. We deduced the elements of the experimental setup from acknowledged theory and the composition of the elements within the measurement instrument is coherent and cohesive, but also novel and courageous, and thus we also suggest verifying the applied methodology through future research. We provide strong arguments that the specifics of the investigated ESN did not affect the findings.

8.4 Summary of study 4 – The role of communicational behavior of executives in the age of ESNs

Purpose The rise of social communication with its inherent change in language (e.g. use of smileys, abbreviations and acronyms) as well as increased visibility and extended transparency requires a thoughtful reflection of current communicational behavior of executives. Currently, there is only little research that addresses the impact of smileys in corporate communication on perceived interpersonal characteristics in a professional environment.

Method Literature review, case study (n=55), expert interviews (n=1), survey, empirical inductive analysis.

Findings The use of smileys in company-internal email communication does have different but mainly adverse effects on the perceived characteristics of an executive. Descriptive analysis outlines that smiley use (1) negatively affects the perceived professionalism, competence, the status of the executive as well as the confidence in the executive, (2) positively affects the perceived friendliness and – if well dosed – on the ability of an executive to motivate his/her employees.

Key Table

perceived characteristics of an executive (7-point Likert scale)	Smileys used in scenarios 1-3			Comparing means of scores			effect
	0	☺	☺☺☺	0 vs. ☺	☺ vs. ☺☺☺	0 vs. ☺☺☺	
professional	5.8	4.2	3.0	-1.5	-1.2	-2.7	negatively
represents position representative	5.6	4.6	2.9	-1.0	-1.7	-2.6	negatively
meritocratic	5.9	5.1	4.2	-0.7	-1.0	-1.7	negatively
assertive	5.2	4.6	3.6	-0.6	-0.9	-1.6	negatively
self-confident	5.8	5.3	4.5	-0.4	-0.9	-1.3	negatively
reasonable	5.7	5.1	4.4	-0.6	-0.7	-1.3	negatively
financially successful	5.2	4.7	4.0	-0.5	-0.7	-1.2	negatively
kind	4.7	5.8	5.8	1.2	0.0	1.1	positively
sincere	5.6	5.6	5.0	-0.1	-0.6	-0.7	negatively
trustworthy	5.4	5.1	4.7	-0.2	-0.4	-0.7	negatively
accepts no responsibility	3.5	3.6	4.0	0.1	0.4	0.5	positively (reverse scored)
motivates others	4.7	5.2	4.6	0.6	-0.7	-0.1	positively & negatively

Results of the descriptive analysis as presented in Table 33.

Theoretical implications Our findings in general confirm the studies of Ellensburg (2012), Skovholt et al. (2014) and Yoo (2007) who found that smiley use affects the interpersonal perception of the sender. We, to the first time investigate smiley effect when the sender is an executive and thereby extend theory by investigating whether and how the usage of smileys affects the perceived characteristics of executives.

The presented results confirm, extend and refine the findings of Ellensburg (2012) and Byron and Baldrige (2007) that the use of smileys in the business world significantly worsens the perception of the sender.

Practical implications

We found that the negative effects of using smileys significantly outweigh the positive effects. The findings provide valuable insights on the effects of smiley use on the perceived traits of executives and thus provide orientation and food for thought to executives and leaders who aspire to change towards a more social communication style.

Study limitations

We carefully selected the sample and ensured an industry independent setup and that the participants held reasonable work experience. However, we suggest iterating the study within organizations of different industries to better understand the effects of smiley use in different branches.

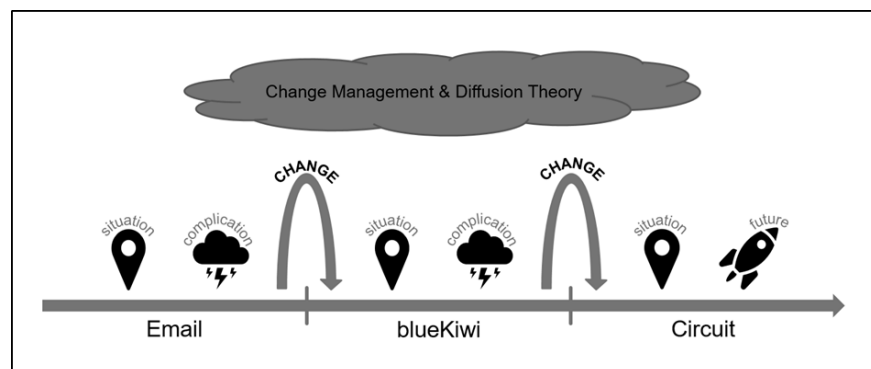
We suggest iterating the study by using ESN posts instead of emails as medium to better understand the role of the medium in which the communication happens.

By applying descriptive analysis, we were able to clearly show the effect of smiley use in the given context. However, we suggest increasing the sample and applying more rigorous statistical methods (e.g. ANOVA) in future research settings.

8.5 Summary of study 5 – Organizational change associated with ESNs

Purpose	The power to change became a measure to assess future success of a company (Beer & Nohria, 2000). When ESNs are implemented in organizations 80% of projects do not fulfill their expectations (Mann et al., 2012). Thus, we investigate, what is effective change management practice for introducing an ESN in a large organization?
Method	Literature review, case study, expert interview (n=7), conceptual deductive analysis, empirical inductive analysis, model building.
Findings	<p>A curriculum to teach the role of change management, innovation diffusion theory and technology acceptance models during the implementation of ESNs.</p> <p>A framework of successful change management associated with the implementation of ESNs.</p> <p>A summary on conceptual background of change management theory.</p>

Key figure



Structure of Teaching Case and Teaching Notes as presented in Figure 60.

Theoretical implications

We discuss and summarize existing change management theory (Atos, 2012a; Cummings & Worley, 2009; Kotter, 1996; Lewin, 1947; Lippitt et al., 1958; Prosci, 2017; Watzlawick et al., 1974) with data gained through expert interviews of seven managers or stream leads within two ESN implementation projects.

We enhance theory around technology acceptance theory (Fred D Davis, Bagozzi, & Warshaw, 1989; Goodhue & Thompson, 1995; Venkatesh et al., 2003; Venkatesh & Bala, 2008) and innovation diffusion (Rogers, 2003) by emphasizing topics that are specifically relevant when conducting change management related to the implementation of ESNs, *such as the appraisal of past and former methods, consider (different) change strategies for different groups of people, identifying and developing promoters fitting the vision, experimenting / pilot projects / proof of concept.*

Practical implications

We provide teachers with an exciting journey through the twists and turns of organizational development associated with the introduction of ESNs. Thereby the case emphasizes aspects and different angles of the involved business roles to bring the inherent challenges, tensions and dilemmas to the fore.

With teaching case and teaching notes, we provide rich material and methods to teach organizational development associated with ESNs.

We offer organizations a rich toolset of change management methodology specifically related to the implementation of ESNs, such as the framework of successful change management.

**Study
limitations**

We suggest to regularly revisit the results as the change processes of the implementation of two commercial ESN solutions within two large multinational organizations were considered (2013-2018).

The framework of successful change management and the instrument to develop archetypes of ESN users bases on a purely exploratory research design. Thus, we suggest applying the introduced approaches to validate their applicability and to compare the results retrieved from different change projects.

8.6 Theoretical implications

Within this thesis we extend research by several theoretical contributions. We present a detailed discussion of the contribution to theory per study within the respective sections. In the following, we summarize the major theoretical contributions of this thesis.

First, we contribute to solve the ESN definition dilemma. We provide conceptual clarity on the term and research object ESN by refining and bringing together the definitions published by D. Richter et al. (2011), Leonardi et al. (2013), Herzog et al. (2013). We, furthermore, contribute with a thorough framework that helps to anchor research based on the elements, relations and interactions by which an ESN is characterized. In addition, we present a research agenda on organizational development related to the implementation of ESNs. In summary, we increase orientation within the field of ESN research.

Second, we contribute to theory by increasing the understanding on the adoption and acceptance of ESNs by employees. Specifically, our findings extend the discussion on user typification of Rogers (2003) Velasquez et al. (2014) Jahnke (2010) in the context of ESNs. Furthermore, our findings contribute to technology acceptance theory (Fred D Davis, Bagozzi, & Warshaw, 1989; Goodhue & Thompson, 1995; Venkatesh et al., 2003; Venkatesh & Bala, 2008) by reflecting ESN specifics. By providing an explanatory model for archetypes of ESN users and an overview on drivers and barriers of ESN adoption, this study contributes to the discussion on user typification, user acceptance, utilization intensity, and value contribution of ESNs in large organizations.

Third, we provide an important theoretical contribution by quantifying the value contribution of ESNs. With our findings, we entitle research to take the next step and ask: Does the knowledge about the significant positive effect of ESN use on task efficiency when moderated by ESN experience lead to increased adoption and utilization intensity of ESNs? Thereby we contribute to technology acceptance theory (Fred D Davis, Bagozzi, & Warshaw, 1989; Goodhue & Thompson, 1995; Venkatesh et al., 2003; Venkatesh & Bala, 2008). We, furthermore, answer to the request in the discussion around measuring the value of IT in general (DeLone & McLean, 2003; Schryen, 2013) and for ESNs in particular (Herzog et al., 2014; Williams et al., 2013). By combining the work of C. Cooper et al. (2010), DeLone and McLean (2003), Gattiker and Goodhue (2005), Herzog and Richter (2016), Krcmar (2015), Venkatesh and Bala (2008). With a novel, courageous but theory-centered and thus transparent experimental setup, we shed light on the relevance of ESN experience to solve the chicken and egg dilemma of adoption. Here, the chicken and egg dilemma means that the employee perceives a derogation of task-efficiency and stops using the ESN before ESN experience is built, which again is the trigger to significantly benefit from ESN use.

Fourth, we contribute to theory by increasing the understanding of the role of leaders and leadership communication in ESNs. By investigating whether and how the use of smileys affects the perception of a leader we contribute to existing research by purely focusing on the interpretation of an executive as a person, which has not been done in previous research. Our findings in general confirm the studies of Ellensburg (2012), Skovholt et al. (2014) and Yoo (2007) that smiley use affects the interpersonal perception of the sender and extend theory by

investigating whether and how the usage of smileys affects the perceived characteristics of executives. The presented results confirm, extend and refine the findings of Ellensburg (2012) and Byron and Baldrige (2007) that the use of smileys in the business world significantly worsens the perception of the sender.

Fifth, we contribute to existing change management theories (Atos, 2012a; Cummings & Worley, 2009; Kotter, 1996; Lewin, 1947; Lippitt et al., 1958; Prosci, 2017; Watzlawick et al., 1974) with data gained through expert interviews of seven managers or streamleads within two ESN implementation projects. Thereby we contribute to theory around technology acceptance theory (Fred D Davis, Bagozzi, & Warshaw, 1989; Goodhue & Thompson, 1995; Venkatesh et al., 2003; Venkatesh & Bala, 2008) and innovation diffusion (Rogers, 2003) by emphasizing topics that are specifically relevant when conducting change management related to the implementation of ESNs, *such as the appraisal of past and former methods, consider (different) change strategies for different groups of people, identifying and developing promoters fitting the vision, experimenting / pilot projects / proof of concept.*

In addition, we provide a robust conceptual foundation for interdisciplinary research. Within this thesis, we soundly add and interlock theory on technology (ESNs) and social individuals using technology (Archetypes of ESN users) with existing theory on change management. Thereby we created theory related to manage change associated with the implementation of ESNs. More specific, we combine the *ESN Framework* we determine in study 1 (section 3 State of the art on ESNs) and the *archetypes of ESN users* we identify in study 2 (section 4 The adoption and diffusion of ESNs) with the *framework of successful change management* we craft in study 5 (7.4 Developing a framework of successful change management) to create a theoretical approach to manage change associated with the implementation of ESNs within study 5 (section 7.5 Developing an instrument to manage change associated with the implementation of ESNs)

In summary, we contribute to the following three major fields of research: The fields of *value contribution* (Herzog et al., 2014), *beneficial use-cases* (Herzog & Richter, 2016), and *positive effects of ESN use* with its key benefits: improved communication across hierarchical and organizational boundaries (DiMicco et al., 2008; Zhang et al., 2010), improved knowledge transfer and expert search (Bughin, 2008; Fulk & Yuan, 2013; Leonardi, 2014; Li et al., 2012; Mansour et al., 2011), enhanced innovational strength (H. Hasan & Pfaff, 2006; Leonardi, 2014; Mäntymäki & Riemer, 2014), and the establishment and strengthening of social ties (Jackson et al., 2007; Thom-Santelli et al., 2008).

Overall, by combining the results of this thesis, we were able to document the value contribution of ESNs and thus verify and underpin the importance and relevance of ESNs to achieve organizational success. Thereby we validated and confirmed positive effects of ESN use based on the experience of ESN users in study 2 The adoption and diffusion of ESNs via expert interviews and based on the results of study 3 The value contribution of ESNs where we quantified the value contribution of ESN use via a field experiment.

8.7 Practical implications

The overall objective of this thesis is to increase the understanding of how the implementation of an ESN affects an organization. This thesis provides several implications to practice.

First, we present a framework that helps to understand what ESNs are. It furthermore helps e.g. solution architects to compare the features and functionalities of commercial ESN solutions. The framework helps to evaluate and compare the affordances of different ESN solutions and map those to the requirements of their organization.

Second, we present a framework that helps to increase understanding on the different user ESN user types. Based on the framework, the interview guide, the personality test and the coding scheme, our model allows organizations to analyze their workforce and generate a kind of ESN-readiness-profile that allows the organization to take concrete measures per archetype to increase ESN acceptance and actual utilization intensity.

Third, we introduce an instrument that helps executives, leaders and managers to understand and quantify the value contribution an ESN has on their organization. By the field experiment we conduct in study 3 *The value contribution of ESNs*, we provide significant results, arguments, and methodologies that help executives, leaders and managers to develop organizations by managing change and expectations during the implementation of ESNs properly. The simple but powerful use-case based experimental setup allows executives, leaders and managers to repeat the experiment in order to analyze and identify value areas within their organization and thus to evaluate a planned or already realized ESN investment.

Fourth, we support managers and executives to understand the impact on their perceived traits when using smileys within their business communication. We found that the negative effects of using smileys significantly outweigh the positive effects. The findings provide valuable insights on the effects of smiley use on the perceived traits of executives and thus provide orientation and food for thought to executives and leaders who aspire to change towards a more social communication style.

Fifth, we provide an exciting journey through the twists and turns of organizational development associated with the introduction of ESNs for organizational and university education. With a teaching case, we emphasize aspects and different angles of the involved business roles in ESN integration projects to bring the inherent challenges, tensions and dilemmas to the fore. With the teaching case and the teaching notes presented within this thesis, we provide rich material and methods to reflect organizational development associated with ESNs. Overall, we offer organizations a rich toolset of change management methodology specifically related to the implementation of ESNs via the framework of successful change management we present in study 5 *Developing a framework of successful change management*.

By combining the study-specific practical contributions of this thesis we provide a major superordinate contribution, a managerial structure that guides leaders through an ESN implementation process. We present the base elements of the managerial structure within Table 57.

Stage		Relevant for		Content
		Executives	Employees	
1	Understanding ESN technology	x	x	Study 1: State of the art on ESNs
2	Understanding ESN users. Analyzing the workforce of an organization	x	x	Study 2: The adoption and diffusion of ESNs
3	Analyzing the economic impact of ESNs	x		Study 3: The value contribution of ESNs
4	Reflecting leadership in the age of ESNs	x		Study 4: The role of communicational behavior of executives in the age of ESNs
5	Managing ESN use	x	x	Study 5: Organizational change associated with ESNs

Table 57 The 5-stages managerial structure of implementing ESNs

Source: Own illustration

To get a logical order in the building blocks of the managerial structure, we break them down in two phases, namely the strategical phase and the operational phase. The strategical phase represents the time before the adoption of a technology. It is a phase in which the organization tries to understand whether it is strategical and economical feasible to implement an ESN. In case the organization decides to adopt an ESN, the organization starts with the operational phase. The operational phase focusses on the integration, operation and development of the ESN solution within the organizational processes. We present the building blocks of both phases in Figure 66.

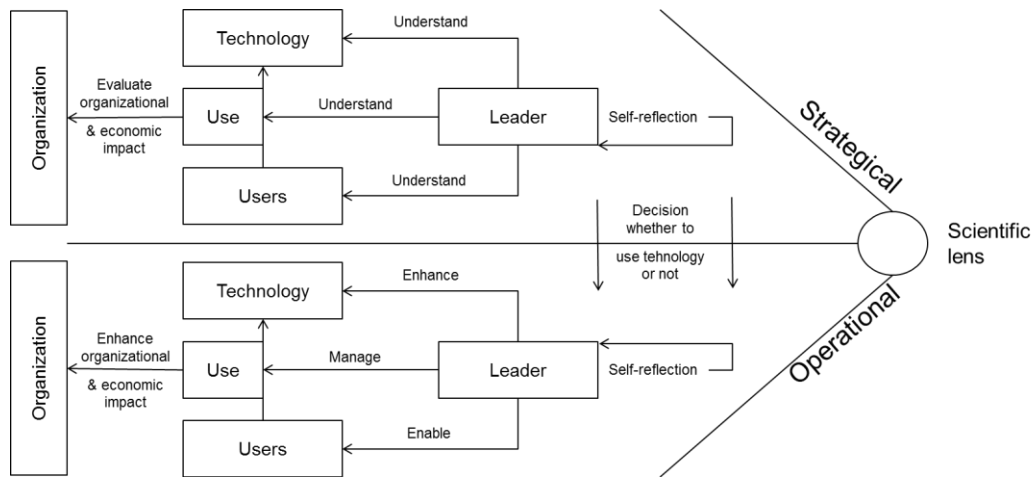


Figure 66 The strategical and operational phases of technology implementation
 Source: Own illustration

Next, we apply a chronological order to the building blocks and present an 11-stages managerial structure. The 11 stages managerial structure consists of the 2x5 element structure presented in Figure 66 and an additional stage reflecting the actual decision taking task. We present the 2x5 stages managerial structure of implementing ESNs in Table 58.

1	Understand technology	Get accustomed with the technology and the possibilities to integrate it into the operational processes of the organization.
2	Understand use	Analyze the preconditions and impacts of technology use. How will the business processes in the organization be improved or will process breaches occur? Increase understanding about whether the requirements, such as changes in the current business processes, can be met and whether technology use leads to the desired impacts, such as an increase in productivity.
3	Understand users	Increase understanding of the different types of users in your organization and their perceived benefits and drawbacks of technology use. Determine and assess the attitude of your employees towards the technology. Can a rejection of the employees jeopardize the implementation project?
4	Leader	Reflect your own attitude towards the technology. Would a positive, negative or neutral attitude influence the decision about the implementation of the technology, and how? Does the implementation of the technology require a specific leadership style to be successful?
5	Organization	Evaluate the overall organizational and economic impact of the technology, such as costs, revenues, operational performance, organizational culture, etc.
6	Decision	Decide whether to implement or keep the technology based on the insights from steps 1-5. If the decision is pro implementation, continuously keep processing steps 1-5 and in parallel start processing steps 7-12.

7	Enhance technology	After the technical implementation, setup a program to recurrently check and enhance the technology. Rethink existing features, can they be used in other areas of the organization? Are new features available that can enhance the contribution of the technology to the organization?
8	Enable Users	Enable and motivate users by applying an integrated and sound change management.
9	Manage Use	Constantly monitor technology use. Determine, analyze and mitigate obstacles that hinder the employees to use the technology.
10	Leader	Critically reflect whether your current leadership supports adoption of the technology. Reflect your attitude towards the technology after implementation. Still convinced? Think about bringing the organizational outcome to the next level. Understand whether and how the technology allows you to improve organizational efficiency in the future. Manage expectations and communicate by using facts and figures to motivate and convince and thus support the change.
11	Organization	Monitor and reflect whether the expected impacts to the organization occur and take appropriate measures to correct deviations. Constantly enhance the organizational and economical improvements through technology use.

Table 58 The 2x5-stages managerial structure of implementing ESNs

Source: Own illustration

8.8 Limitations and outlook on future research

Our overall study setup is characterized by a sound mix of theory and practice-based research. Specifically, the close cooperation with two large case companies and two real ESN solutions allowed us to generate strong results. For future research, we recommend the replication of the investigated research questions and applied methods in further companies and their ESN solutions as well as by an increased number of participants. This would be specifically important to comprehensively investigate value areas of ESN use and thus would allow identifying tasks that benefit or worsen from being executed via an ESN.

The single results of the presented studies are subject to limitations. We present a detailed discussion of these limitations at the end of each study and point out the main statements within the study summaries we present in the chapters 8.1, 8.2, 8.3, 8.4 and 8.5. Subsequently, we outline general recommendations to tie up future research with the research presented within this thesis.

ESN research is of substantial interest for research and organizations. We show that ESN use still provides significant growth potential for organizations. In addition, we show that after a period of more than 20 years of research in social communication, ESNs are still a relevant and fruitful field of investigation.

Specifically the approach to quantify the economic value contribution of ESN use presented in section 5 *The value contribution of ESNs* could be a fresh starting point to revitalize research around value of IT. As shown in our theoretical background of study 3 in section 5, the measurement and quantification of the value of IT has been a major challenge in research since

decades. Our research is important, as we achieved to develop and evaluate an instrument to quantify the value contribution of ESN use and thus to significantly contribute to the discussion around measurement of the value of IT. To address future research, we suggest conducting comprehensive research on task-efficiency in different industries based on the instrument to quantify value of IT presented in section 5.

The dilemma of becoming slower when starting using ESNs prevents users to become familiar with ESNs. This is extremely critical, as the task-efficiency increases significantly only when users are familiar with ESNs. Our research is important, as we actually managed to quantify the value contribution of ESNs which is outlined by theory to be a relevant indicator to predict ESN adoption. We suggest future research to identify and prove value areas of ESN use and investigate whether the knowledge about the quantified advantageousness of ESN compared to prevalent IT in these areas motivates employees to get accustomed with ESNs even when their task-efficiency decreases in the beginning. It is important to show employees that it is worth to invest in getting accustomed to ESN use.

Our research is important, as we emphasize the role of executives in the overall concept of this thesis. Despite the various recommended actions towards executives that can be derived from the presented results in terms of organizational development by implementing ESNs, change management related to ESN implementation, the role of communicational behavior of executives (e.g. smiley usage), we suggest to strengthen research around the use of ESNs by executives. A major question to answer is whether and how executives should use ESNs to increase use and adoption.

9 References

- Ackoff, R. L. (1989). From data to wisdom. *Journal of Applied Systems Analysis*, 16(1), 3–9.
- Alarifi, A., Sedera, D., & Recker, J. (2015). Posters versus lurkers: Improving participation in enterprise social networks through promotional messages. *ICIS 2015 Proceedings*.
- Alexander, M. G., Brewer, M. B., & Livingston, R. W. (2005). Putting stereotype content in context: Image theory and interethnic stereotypes. *Personality and Social Psychology Bulletin*, 31(6), 781–794.
- Anderson, C., John, O. P., & Keltner, D. (2012). The personal sense of power. *Journal of Personality*, 80(2), 313–344.
- Anderson, E., & Schiano, B. (2014). *Teaching With Cases: A Practical Guide*. Boston: Harvard Business School Publishing.
- Atos (2012a). Enterprise social collaboration for a better way of working. Whitepaper. Retrieved from <http://fr.atos.net/content/dam/global/we-do/atos-Social-collaboration-brochure.pdf>
- Atos (2012b). Registration document 2012. Retrieved from <https://atos.net/content/dam/global/documents/investor-financial-reports/atos-registration-document-2012.pdf>
- Atos (2013). Annual report 2013 at the core of life today. Annual report. Retrieved from https://atos.net/content/dam/global/reports-2013/Skins/Atos/doc/PDF_RA_UK/atos-annual-report-2013.pdf
- Atos (2016). Registration document 2016. Retrieved from <https://atos.net/wp-content/uploads/2017/03/atos-2016-registration-document.pdf>
- Atos (2017a). Company Profile. Retrieved from <https://atos.net/en/about-us/company-profile>
- Atos (2017b). Zero Email. Retrieved from <http://uk.atos.net/en-uk/home/we-are/zero-email.html#>
- Atos, The Gores Group, & Siemens (2015, November 3). Atos to acquire Unify from Gores and Siemens. Retrieved from www.siemens.com/press/PR2015110065COEN
- Attewell, P. (1992). Technology Diffusion and Organizational Learning: The Case of Business Computing. *Organizational Science*.
- BBC (2014). Email and webmail. Retrieved from <http://www.bbc.co.uk/schools/gcsebitesize/ict/datacomm/1emailrev1.shtml>
- Beer, M., & Nohria, N. (2000). Cracking the code of change. *HBR's 10 Must Reads on Change*, 78(3), 133–141.
- Behrendt, S., Richter, A., & Trier, M. (2014). Mixed methods analysis of enterprise social networks. *Computer Networks*, 75, 560–577.
- Bellotti, V., Ducheneaut, N., Howard, M., Smith, I., & Grinter, R. E. (2005). Quality Versus Quantity: E-Mail Centric Task Management and Its Relation With Overload. *Human Computer Interactions*. (20), 89–138.

- Benbasat, I., Goldstein, D. K., & Mead, M. (1987). The case research strategy in studies of information systems. *MIS Quarterly*, 369–386.
- Berger, C. R., & Calabrese, R. J. (1974). Some explorations in initial interaction and beyond: Toward a developmental theory of interpersonal communication. *Human Communication Research*, 1(2), 99–112.
- Berger, K., Klier, J., Klier, M., & Richter, A. (2014). ‘Who is key...?’-Value adding users in enterprise social networks. In *22nd European Conference on Information Systems*.
- Bhattacharjee, A. (2012). Social science research: Principles, methods, and practices.
- Bibliographisches Institut GmbH (2019). Duden. Retrieved from <https://www.duden.de/rechtschreibung/Methode>
- BlueKiwi (2017). Core features. Retrieved from <https://bluekiwi.io/features/>
- Böhm, M. (2015). *IT-bezogene Herausforderungen im Kontext von Unternehmensdesinvestitionen*. Technische Universität München.
- Bohn, P. (2017). blueKiwi joins Unify. Retrieved from <https://bluekiwi.io/blog/bluekiwi-joins-unify/>
- Bortz, J. [Jürgen], & Döring, N. [Nicola] (1995). Forschungsmethoden und Evaluation (2., vollständig überarbeitete und aktualisierte Auflage). *Berlin Ua: Springer*.
- Boyd, d. m., & Ellison, N. B. (2007). Social Network Sites: Definition, History, and Scholarship. *Journal of Computer-Mediated Communication*, 13(1), 210–230. <https://doi.org/10.1111/j.1083-6101.2007.00393.x>
- Brignall, T. W., & van Valey, T. (2005). The impact of internet communications on social interaction. *Sociological Spectrum*, 25(3), 335–348.
- Brynjolfsson, E. (1993). The productivity paradox of information technology. *Communications of the ACM*, 36(12), 66–77.
- Bughin, J. (2008). The rise of enterprise 2.0. *Journal of Direct, Data and Digital Marketing Practice*, 9(3), 251–259. <https://doi.org/10.1057/palgrave.dddmp.4350100>
- Bughin, J. (2013). Look Beyond Your “Social Media Presence”: <https://hbr.org/2013/01/look-beyond-a-social-media-presence>. Retrieved from <https://hbr.org/2013/01/look-beyond-a-social-media-presence>
- Bughin, J., Dobbs, R., Roxburgh, C., Sarrazin, H., Sands, G., & Westergren, M. (2012). The social economy: Unlocking value and productivity through social technologies. <https://www.Mckinsey.Com/industries/high-Tech/our-Insights/the-Social-Economy>.
- Burkus, D. (2016a). Some Companies Are Banning Email and Getting More Done. Retrieved from <https://hbr.org/2016/06/some-companies-are-banning-email-and-getting-more-done>
- Burkus, D. (2016b). Why Atos Origin Is Striving To Be A Zero-Email Company. Retrieved from <https://www.forbes.com/sites/davidburkus/2016/07/12/why-atos-origin-is-striving-to-be-a-zero-email-company/#386d44518d0f>
- Burt, R. S. (2000). The network structure of social capital. *Research in Organizational Behavior*, 22, 345–423.

- Burton-Jones, A., & Hubona, G. S. (2005). Individual differences and usage behavior: Revisiting a technology acceptance model assumption. *ACM Sigmis Database*, 36(2), 58–77.
- Byron, K., & Baldrige, D. C. (2007). E-mail recipients' impressions of senders' likability: The interactive effect of nonverbal cues and recipients' personality. *The Journal of Business Communication* (1973), 44(2), 137–160.
- Cao, J., Gao, H., Li, L. E., & Friedman, B. (2013). Enterprise social network analysis and modeling: A tale of two graphs. In *INFOCOM, 2013 Proceedings IEEE*. Symposium conducted at the meeting of IEEE.
- Carr, N. G. (2003). IT doesn't matter. *Educause Review*, 38, 24–38.
- Choudrie, J., & Zamani, E. D. (2016). Understanding individual user resistance and workarounds of enterprise social networks: The case of Service Ltd. *Journal of Information Technology*, 31(2), 130–151.
- Cleverism (2017). Step-by-step guide to Make or Buy Decision. Retrieved from <https://www.cleverism.com/make-or-buy-decision-step-by-step-guide/>
- Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS Quarterly*, 189–211.
- Cooper, C., Martin, M., & Kiernan, T. (2010). *Measuring the value of social software. Defining a measurement approach that maps activity to business value. IBM Whitepaper.*
- Cooper, H. M. (1988). Organizing knowledge syntheses: A taxonomy of literature reviews. *Knowledge in Society*, 1(1), 104.
- Costa Jr, P. T., & McCrae, R. R. (1992). The five-factor model of personality and its relevance to personality disorders. *Journal of Personality Disorders*, 6(4), 343–359.
- Creasey, T. (2016). The History and Future of Change Management. Retrieved from <https://www.linkedin.com/pulse/history-future-change-management-tim-creasey>
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*: Sage publications.
- Cuddy, A. J. C., Fiske, S. T., & Glick, P. (2008). Warmth and competence as universal dimensions of social perception: The stereotype content model and the BIAS map. *Advances in Experimental Social Psychology*, 40, 61–149.
- Cummings, T. G., & Worley, C. G. (2009). *Organization development and change*: Wiley Online Library.
- Cummings, T. G., & Worley, C. G. (2015). *Organizational Development and Change* (10th ed.). Stamford: Cengage Learning.
- Davis, F. D. [Fred D], Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 35(8), 982–1003.
- Davis, F. D. [Fred D.] (1989). Perceived Usefulness, Perceives Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319–340.

- Davis, F. D. [Fred D.], & Venkatesh, V. (2004). Toward preprototype user acceptance testing of new information systems: Implications for software project management. *IEEE Transactions on Engineering Management*, (51 1), 31–46.
- DeLone, W. H., & McLean, E. R. (1992). Information systems success: The quest for the dependent variable. *Information Systems Research*, 3(1), 60–95.
- DeLone, W. H., & McLean, E. R. (2002). Information systems success revisited. In *System Sciences, 2002. HICSS. Proceedings of the 35th Annual Hawaii International Conference on*. Symposium conducted at the meeting of IEEE.
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, 19(4), 9–30.
- Deng, C., & Ravichandran, T. (2017). When Do Managers Respond to Electronic Word of Mouth? In *Academy of Management Proceedings*. Symposium conducted at the meeting of Academy of Management.
- Derks, D., Fischer, A. H., & Bos, A. E. R. (2008). The role of emotion in computer-mediated communication: A review. *Computers in Human Behavior*, 24(3), 766–785.
- Diekmann, A. (2007). *Empirische Sozialforschung: Grundlagen, Methoden, Anwendungen*. 18. Aufl. Hamburg.
- DiMicco, J., Millen, D. R., Geyer, W., Dugan, C., Brownholtz, B., & Muller, M. (2008). Motivations for social networking at work. *Proceedings of the 2008 ACM Conference on Computer Supported Cooperative Work*, 711–720.
- Döring, N. [N.], & Bortz, J. [J.] (2016). *Forschungsmethoden und Evaluation in den Sozial- und Humanwissenschaften*. 5. Auflage Berlin: Heidelberg: Springer.
- Dresner, E., & Herring, S. C. (2010). Functions of the nonverbal in CMC: Emoticons and illocutionary force. *Communication Theory*, 20(3), 249–268.
- Drucker, P. F. (1994). *Post-capitalist society*: Routledge.
- Dubin, R. (1978). *Theory development*: New York: Free Press.
- Ducheneaut, N., & Watts, L. A. (2005). In search of coherence: A review of e-mail research. *Human-Computer Interaction*, 20(1), 11–48.
- Edmondson, A. C., & McManus, S. E. (2007). Methodological fit in management field research. *Academy of Management Review*, 32(4), 1246–1264.
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532–550.
- Ellensburg, R. (2012). Emoticons as social information: The effect of emoticons on interpersonal perception in computer-mediated business communication. *TFM De Programa De Investigación En Psicología, Universidad De Amsterdam. Disponible En*.
- Ellison, N. B., & boyd, d. m. (2013). Sociality through social network sites. In *The Oxford handbook of internet studies*.
- Ellison, N. B., Gibbs, J. L., & Weber, M. S. (2015). The Use of Enterprise Social Network Sites for Knowledge Sharing in Distributed Organizations. *American Behavioral Scientist*, 59(1), 103–123.

- Fichman, R. G. (1992). Information technology diffusion: A review of empirical research. In *ICIS*.
- Fichman, R. G. (2004). Going Beyond The Dominant Paradigm for Information Technology Innovation Research: Emerging Concepts and Methods. *Journal of the Association for Information Systems*, (5 8), 314–355.
- Field, A., Miles, J., & Field, Z. (2012). *Discovering statistics using R*: Sage, Thousand Oaks.
- Fuchs-Kittowski, F. (2007). *Integrierte IT-Unterstützung der Wissensarbeit: Eine tätigkeits- und kooperationsorientierte Perspektive*: Eul.
- Fulk, J., & Yuan, Y. C. (2013). Location, Motivation, and Social Capitalization via Enterprise Social Networking. *Journal of Computer-Mediated Communication*, 19(1), 20–37.
- Gable, G. G., Sedera, D., & Chan, T. (2008). Re-conceptualizing information system success: The IS-impact measurement model. *Journal of the Association for Information Systems*, 9(7), 377.
- Galperin, E. (2017). The Real Cost of Software Development. Retrieved from <http://www.techfounder.net/2013/02/01/the-real-cost-of-software-development/>
- Gattiker, T. F., & Goodhue, D. L. (2005). What happens after ERP implementation: Understanding the impact of interdependence and differentiation on plant-level outcomes. *MIS Quarterly*, 559–585.
- Ghoshal, S., & Bartlett, C. A. (1988). Creation, adoption and diffusion of innovations by subsidiaries of multinational corporations. *Journal of International Business Studies*, 19(3), 365–388.
- Gläser, J., & Laudel, G. (2009). Experteninterviews und qualitative Inhaltsanalyse als Instrumente rekonstruierender Untersuchungen. 3., überarbeitete Auflage. *VS-Verlag Für Sozialwissenschaften, Wiesbaden*.
- Goodhue, D. L., & Thompson, R. L. (1995). Task-technology fit and individual performance. *MIS Quarterly*, (19 2), 213–236.
- Hacker, J. (2017). Enterprise Social Networks: Platforms for Enabling and Understanding Knowledge Work? In *Social Knowledge Management in Action* (pp. 17–37). Springer.
- Happ, S., & Wolf, F. (2009). Enterprise 2.0: Vom ROI zum RONI (Risk of Not Investing). Retrieved from <http://www.projektmanagement20.de/enterprise-20-vom-roi-zum-roni-risk-on-not-investing/86/>
- Hasan, H., & Pfaff, C. (2006). The Wiki: an environment to revolutionise employees' interaction with corporate knowledge. *International Conference on Advances in Computer-Human Interactions*, 377–380. <https://doi.org/10.1145/1228175.1228250>
- Hasan, H. M., & Pfaff, C. C. (2006). The Wiki: an environment to revolutionize employees' interaction with corporate knowledge. *International Conference on Advances in Computer-Human Interactions*, 377–380.
- Hayes, J. (2002). *The Theory and Practice of Change Management* (2nd ed.). New York: Palgrave Macmillan.

- Heckhausen, J., Dixon, R. A., & Baltes, P. B. (1989). Gains and losses in development throughout adulthood as perceived by different adult age groups. *Developmental Psychology*, 25(1), 109.
- Herzog, C., & Richter, A. (2016). Use cases as a means to support the appropriation of enterprise social software. In *System Sciences (HICSS), 2016 49th Hawaii International Conference on*. Symposium conducted at the meeting of IEEE.
- Herzog, C., Richter, A., & Steinhüser, M. [Melanie] (2015). Towards a framework for the evaluation design of enterprise social software.
- Herzog, C., Richter, A., Steinhüser, M. [Melanie], Hoppe, U. [Uwe], & Koch, M. (2013). Methods and metrics for measuring the success of Enterprise Social Software-what we can learn from practice and vice versa. In *21st European Conference on Information Systems*.
- Herzog, C., Richter, A., Steinhüser, M. [M.], Hoppe, U. [U.], & Koch, M. (2014). Barrieren der Erfolgsmessung von Enterprise Social Software. *Tagungsband MKWI 2014*, 1681–1693.
- Hess, T. (2012). *Wirtschaftsinformatik als akademisches Fach: Fokus Anwender-Unternehmen oder doch mehr?*
- Howell, D. C. (2012). *Statistical methods for psychology*: Cengage Learning.
- Isaac, S., & Michael, W. B. (1995). *Handbook in research and evaluation: A collection of principles, methods, and strategies useful in the planning, design, and evaluation of studies in education and the behavioral sciences*: Edits publishers.
- Jackson, A., Yates, J., & Orlikowski, W. (2007). Corporate Blogging: Building community through persistent digital talk. In *40th Annual Hawaii International Conference on System Sciences*.
- Jahnke, I. (2010). Dynamics of social roles in a knowledge management community. *Computers in Human Behavior*, 26(4), 533–546.
- Jeyaraj, A., Rottman, J. W., & Lacity, M. C. (2006). A review of predicators, linkages, and biases in IT innovation adoption research. *Journal of Information Technology*. (21).
- John, O. P., Srivastava, S., & others (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. *Handbook of Personality: Theory and Research*, 2(1999), 102–138.
- Jones, G. (2010). *Organizational Theory, Design, and Change: Global edition (7th ed.)*: Pearson Higher Education. Torrington, Derek.
- Jones, G. R. (2010). *Organizational Theory, Design and Change (6th ed.)*. Toronto: Pearsons Verlag.
- Kane, G. C., Majchrzak, A., Ives, B., & Brown, C. V. (2010). Editors' comments-special issue on enterprise and industry applications of social media. *MIS Quarterly Executive*, 9(4), iii–iv.
- Kaplan, A. (2017). *The conduct of inquiry: Methodology for behavioural science*: Routledge.
- Kaske, F., Kugler, M., & Smolnik, S. (2012). Return on investment in social media-Does the hype pay off? Towards an assessment of the profitability of social media in organizations.

- In *System Science (HICSS), 2012 45th Hawaii International Conference on*. Symposium conducted at the meeting of IEEE.
- Kidd, A. (1994). The marks are on the knowledge worker. In *Proceedings of the SIGCHI conference on Human factors in computing systems*. Symposium conducted at the meeting of ACM.
- Kim, H.-W., & Kankanhalli, A. (2009). Investigating user resistance to information systems implementation: A status quo bias perspective. *MIS Quarterly*, 567–582.
- Kirkpatrick, J., & Kirkpatrick, W. K. (2009). The Kirkpatrick Four Levels™: A Fresh Look After 50 Years 1959 - 2009. Retrieved from <http://www.kirkpatrickpartners.com/Portals/0/Resources/Kirkpatrick%20Four%20Levels%20white%20paper.pdf>
- Kiron, D., Palmer, D., Phillips, A. N., & Berkman, R. (2013). Social business: Shifting out of first gear. *MIT Sloan Management Review*, 55(1), 1.
- Koch, M., & Richter, A. (2009). *Enterprise 2.0: Planung, Einführung und erfolgreicher Einsatz von Social Software in Unternehmen*: Oldenbourg Verlag.
- Koh, J., & Kim Y.-G. (2004). Knowledge sharing in virtual communities: an e-business perspective. *Expert Systems with Applications*. (26), 155–166.
- Kotter, J. P. (1996). *Leading change*. Boston, Massachusetts: Harvard business review press.
- Kraemer, K. L. (1991). *The information systems research challenge (vol. III): Survey research methods*: Harvard University Graduate School of Business Administration.
- Krcmar, H. (2015). Informationsmanagement. In *Informationsmanagement* (pp. 85–111). Springer.
- Krohn, F. B. (2004). A generational approach to using emoticons as nonverbal communication. *Journal of Technical Writing and Communication*, 34(4), 321–328.
- Kuegler, M., Smolnik, S., & Kane, G. (2015). What's in IT for employees? Understanding the relationship between use and performance in enterprise social software. *The Journal of Strategic Information Systems*, 24(2), 90–112.
- Kügler, M., Smolnik, S., & Raeth, P. (2012). Why don't you use it? Assessing the determinants of enterprise social software usage: A conceptual model integrating innovation diffusion and social capital theories.
- Kügler, M., Smolnik, S., & Raeth, P. (2013). Determining the factors influencing enterprise social software usage: Development of a measurement instrument for empirical assessment. In *System Sciences (HICSS), 2013 46th Hawaii International Conference on*. Symposium conducted at the meeting of IEEE.
- Kulkarni, U. R., Ravindran, S., & Freeze, R. (2006). A knowledge management success model: Theoretical development and empirical validation. *Journal of Management Information Systems*, 23(3), 309–347.
- Langley, A. (1999). Strategies for theorizing from process data. *Academy of Management Review*, 24(4), 691–710.

- Leach, C. W., Ellemers, N., & Barreto, M. (2007). Group virtue: The importance of morality (vs. competence and sociability) in the positive evaluation of in-groups. *Journal of Personality and Social Psychology*, 93(2), 234.
- Leftheriotis, I., & Giannakos, M. N. (2014). Using social media for work: Losing your time or improving your work? *Computers in Human Behavior*, 31, 134–142.
- Lehmann, D. R., Gupta, S., & Steckel, J. H. (1998). *Marketing research*: Addison-Wesley Reading, MA.
- Leonardi, P. M. (2004). Social Media, Knowledge Sharing, and Innovation: Toward a Theory of Communication Visibility. *Information Systems Research*, 25(4), 796–816.
- Leonardi, P. M. (2014). Social Media, Knowledge Sharing, and Innovation: Toward a Theory of Communication Visibility. *Information Systems Research*, 25(4), 796–816. <https://doi.org/10.1287/isre.2014.0536>
- Leonardi, P. M., Huysman, M., & Steinfield, C. (2013). Enterprise social media: Definition, history, and prospects for the study of social technologies in organizations. *Journal of Computer-Mediated Communication*, 19(1), 1–19.
- Lewin, K. (1943). Defining the "Field at a Given time". *Psychological Review*, (50), 292–310.
- Lewin, K. (1947). Frontiers in group dynamics: Concept, method and reality in social science; social equilibria and social change. *Human Relations*, 1(1), 5–41.
- Li, C., Webber, A., & Cifuentes, J. (2012). Making the business case for enterprise social networks. *Altimeter Report (February 2012)*, 1–22. Retrieved from <https://de.slideshare.net/Altimeter/altimeter-report-making-the-business-case-for-enterprise-social-networks>
- Lippitt, R., Watson, J., & Westley, B. (1958). *Dynamics of Planned Change: A comparative study of principles and techniques*: Harcourt, Brace & World, Inc.
- Lo, S.-K. (2008). The nonverbal communication functions of emoticons in computer-mediated communication. *CyberPsychology & Behavior*, 11(5), 595–597.
- MacCorquodale, K., & Meehl, P. E. (1948). On a distinction between hypothetical constructs and intervening variables. *Psychological Review*, 55(2), 95.
- Mann, J., Austin, T., Drakos, N., Rozwell, C., & Walls, A. (2012). Predicts 2013: Social and Collaboration Go Deeper and Wider. *Gartner Inc. Report*.
- Mansour, O., Abusalah, M., & Askenäs, L. (2011). Wiki collaboration in organizations: An exploratory study. In *Proceedings of European Computer Information Systems Conference Paper 265*.
- Mäntymäki, M., & Riemer, K. (Eds.) (2014). *Information, ideas and input: The value of enterprise social networks*: ACIS.
- Mäntymäki, M., & Riemer, K. (2016). Enterprise social networking: A knowledge management perspective. *International Journal of Information Management*, 36(6), 1042–1052.
- Maturana, H. R., & Varela, F. J. (1987). *The tree of knowledge: The biological roots of human understanding*: New Science Library/Shambhala Publications.

- Mayring, P. (2010). *Qualitative Inhaltsanalyse*. 11., aktualisierte und überarbeitete Auflage. Beltz: Weinheim.
- McAfee, A. P. (2006). Enterprise 2.0: The dawn of emergent collaboration. *MIT Sloan Management Review*, 47(3), 21.
- Mertins, K., Heisig, P., & Vorbeck, J. (2003). *Knowledge management: Concepts and best practices*: Springer Science & Business Media.
- Merton, R. K. (1967). *On theoretical sociology*: Free Press New York.
- Merz, A. B., Seeber, I., & Maier, R. (2015). Social Meets Structure: Revealing Team Collaboration Activities and Effects in Enterprise Social Networks. In *ECIS*.
- Meske, C., & Stieglitz, S. (2013). Adoption and use of social media in small and medium-sized enterprises. In *Harmsen, F., & Proper, H. (Eds.), Practice-Driven Research on Enterprise Transformation. Lecture Notes in Business Informaion Processing*. (Lecture Notes in Business Informaion Processing Vol. 151), 61-75.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*: sage.
- Mohr, L. B. (1982). *Explaining organizational behavior*: Jossey-Bass.
- Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, 2(3), 192–222.
- Moser, K., Preising, K., Göritz, A. S., & Paul, K. (2002). *Steigende Informationsflut am Arbeitsplatz: Belastungsgünstiger Umgang mit elektronischen Medien (E-Mail, Internet)*: Wirtschaftsverl. NW, Verlag für Neue Wiss.
- Muller, M. J., Freyne, J., Dugan, C., Millen, D. R., & Thom-Santelli, J. (2009). Return On Contribution (ROC): A metric for enterprise social software. *ECSCW 2009*, 143–150.
- Müller-Böling, D., & Klandt, H. (1993). *Methoden empirischer Wirtschafts-und Sozialforschung: Eine Einführung mit wirtschaftswissenschaftlichem Schwerpunkt*: Förderkreis Gründungs-Forschung.
- Müller-Böling, D., & Klandt, H. (1996). Methoden Empirischer Wirtschafts-und Sozialforschung. *Eine Einführung Mit Wirtschaftswissenschaftlichem Schwerpunkt*, 3, 92f.
- Munter, M., Rogers, P. S., & Rymer, J. (2003). Business E-Mail: Guidelines for Users. *Business Communication Quarterly*. (66:1), 26–41.
- Oettl, C., Berger, T., Böhm, M., Wiesche, M., & Krcmar, H. (2018). Archetypes of Enterprise Social Network Users. *51st Hawaii International Conference on System Sciences – HICSS*, 2036–2045.
- Oettl, C. A., Beck, K., Raufer, F. M., Priglmeir, A. T., Böhm, M., & Krcmar, H. (2018). Zero Email initiative: A critical review of Change Management during the introduction of Enterprise Social Networks. *Journal of Information Technology Teaching Cases*. (8), 172–183.
- Okoli, C., Mehdi, M., Mesgari, M., Nielsen, F. Å., & Lanamäki, A. (2014). Wikipedia in the eyes of its beholders: A systematic review of scholarly research on Wikipedia readers and

- readership. *Journal of the Association for Information Science and Technology*, 65(12), 2381–2403.
- Orlikowski, W. J. (1992). Learning from notes: Organizational issues in groupware implementation. In *Proceedings of the 1992 ACM conference on Computer-supported cooperative work*. Symposium conducted at the meeting of ACM.
- Peeters, G. (1993). Self-other anchored evaluations of national stereotypes. *Unpublished Manuscript, Catholic University of Leuven, Leuven, Belgium*.
- Petter, S., Straub, D., & Rai, A. (2007). Specifying formative constructs in information systems research. *MIS Quarterly*, 623–656.
- Poole, M. S., van de Ven, A. H., Dooley, K., & Holmes, M. E. (2000). *Organizational change and innovation processes: Theory and methods for research*: Oxford University Press.
- Preece, J., & Shneiderman, B. (2009). The reader-to-leader framework: Motivating technology-mediated social participation. *AIS Transactions on Human-Computer Interaction*, 1(1), 13–32.
- Probst, G., Raub, S., & Romhardt, K. (2013). *Wissen managen: Wie Unternehmen ihre wertvollste Ressource optimal nutzen*: Springer-Verlag.
- Prosci (2017). ADKAR: Change Management Model Overview & Exercises. Retrieved from <https://www.prosci.com/adkar/adkar-model>
- Raeth, P., Kügler, M., & Smolnik, S. (2011). Measuring the impact of organizational social web site usage on work performance: A multilevel model.
- Rajiv Kumar (2019). What is the difference between concepts and constructs?: What is the difference between concepts and constructs in terms of variables one would consider for measures in research? Retrieved from https://www.researchgate.net/post/What_is_the_difference_between_concepts_and_constructs2
- Richter, A., Heidemann, J., Klier, M., & Behrendt, S. (2013). Success Measurement of Enterprise Social Networks. *Wirtschaftsinformatik*, 20.
- Richter, A., Mörl, S., Trier, M., & Koch, M. (2011). Anwendungsszenarien als Werkzeug zur (V) Ermittlung des Nutzens von corporate social software. In *10th International Conference on Wirtschaftsinformatik, A. Bernstein and G. Schwabe*.
- Richter, A., & Riemer, K. (2013). The Contextual Nature Of Enterprise Social Networking: A Multi Case Study Comparison. In *ECIS*.
- Richter, A., Stocker, A., Müller, S., & Avram, G. (2013). Knowledge management goals revisited: A cross-sectional analysis of social software adoption in corporate environments. *Vine*, 43(2), 132–148.
- Richter, D., Riemer, K., & Vom Brocke, J. (2011). Internet social networking. *Wirtschaftsinformatik*, 53(2), 89–103.
- Riemer, K., Richter, A., & Bohringer, M. (2010). Enterprise microblogging. *Business & Information Systems Engineering*, 2(6), 391–394.
- Riemer, K., & Scifleet, P. (2012). Enterprise social networking in knowledge-intensive work practices: A case study in a professional service firm. In *ACIS 2012: Location, location,*

- location: *Proceedings of the 23rd Australasian Conference on Information Systems 2012*. Symposium conducted at the meeting of ACIS.
- Riemer, K., Stieglitz, S., & Meske, C. (2015). From Top to Bottom. *Business & Information Systems Engineering*, 57(3), 197–212.
- Rogers, E. M. (2003). *Diffusion of Innovations* (5th ed.). New York: Free Press.
- Rosenberg, S., Nelson, C., & Vivekananthan, P. S. (1968). A multidimensional approach to the structure of personality impressions. *Journal of Personality and Social Psychology*, 9(4), 283.
- Rossmann, A., & Stei, G. (2016). Enterprise Social Networks—Einführung in die Thematik und Ableitung relevanter Forschungsfelder. In *Enterprise Social Networks* (pp. 3–23). Springer.
- Rowley, J. (2007). The wisdom hierarchy: representations of the DIKW hierarchy. *Journal of Information Science*, 33(2), 163–180.
- Samaradiwakara, G., & Gunawardena, C. G. (2014). Comparison of existing technology acceptance theories and models to suggest a well improved theory/model. *International Technical Sciences Journal*, 21–36.
- Samuelson, W., & Zeckhauser, R. (1988). Status quo bias in decision making. *Journal of Risk and Uncertainty*, 1(1), 7–59.
- Schlagwein, D., Schoder, D., & Fischbach, K. (2011). Social information systems: Review, framework, and research agenda.
- Schmidt, J.-H., & Taddicken, M. (2017). *Handbuch Soziale Medien*: Springer.
- Schnell, R., Hill, P. B., & Esser, E. (2013). Methoden der empirischen Sozialforschung. 10., überarb. Aufl. München [Ua]: Oldenbourg.
- Schreiner, M., Hess, T., & Benlian, A. (2015). *Gestaltungsorientierter Kern oder Tendenz zur Empirie? Zur neueren methodischen Entwicklung der Wirtschaftsinformatik*.
- Schryen, G. (2010). Ökonomischer Wert von Informationssystemen. *Wirtschaftsinformatik*, 52(4), 225–237.
- Schryen, G. (2013). Revisiting IS business value research: What we already know, what we still need to know, and how we can get there. *European Journal of Information Systems*, 22(2), 139–169.
- Schwabel, D. (2014). Gen Y and Gen Z Global Workplace Expectations Study. Retrieved from <http://millennialbranding.com/2014/geny-genz-global-workplace-expectations-study/>
- Seddon, P. B., Staples, S., Patnayakuni, R., & Bowtell, M. (1999). Dimensions of information systems success. *Communications of the AIS*, 2(3es), 5.
- Sena, J., & Sena, M. (2008). Corporate social networking. *Issues in Information Systems*, 9(2), 227–231.
- Shami, N. S., Nichols, J., & Chen, J. (2014). Social media participation and performance at work: A longitudinal study. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. Symposium conducted at the meeting of ACM.

- Shipilov, A., & Crawford, R. J. (2015). How One Company Reduced Email By 64%. Retrieved from <https://hbr.org/2015/06/how-one-company-reduced-email-by-64>
- Silic, M., Back, A., & Silic, D. (2015). Teaching Case - Email: from zero to hero - the beginning of the end? *Journal of Information Technology Teaching Cases*, (5), 84–91.
- Skovholt, K., Grønning, A., & Kankaanranta, A. (2014). The communicative functions of emoticons in workplace e-mails:-. *Journal of Computer-Mediated Communication*, 19(4), 780–797.
- Smith, M., Hansen, D. L., & Gleave, E. (2009). Analyzing enterprise social media networks. In *Computational Science and Engineering, 2009. CSE'09. International Conference on*. Symposium conducted at the meeting of IEEE.
- Sobotta, N., & Hummel, M. (2015). A capacity perspective on e-mail overload: How E-mail use contributes to information overload. In *System Sciences (HICSS), 2015 48th Hawaii International Conference on*. Symposium conducted at the meeting of IEEE.
- Steinhueser, M., Smolnik, S., & Hoppe, U. [Uwe] (2011). Towards a measurement model of corporate social software success-evidences from an exploratory multiple case study. In *System Sciences (HICSS), 2011 44th Hawaii International Conference on*. Symposium conducted at the meeting of IEEE.
- Stocker, A., & Tochtermann, K. (2011). *Wissenstransfer mit Wikis und Weblogs: Fallstudien zum erfolgreichen Einsatz von Web 2.0 in Unternehmen*: Springer-Verlag.
- Strother, J. B., Ulijn, J. M., & Fazal, Z. (2012). *Information overload: An international challenge for professional engineers and technical communicators* (Vol. 2): John Wiley & Sons.
- Suddaby, R. (2010). *Editor's comments: Construct clarity in theories of management and organization*: Academy of Management Briarcliff Manor, NY.
- Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Personal computing: Toward a conceptual model of utilization. *MIS Quarterly*, 15(1), 125–143.
- Thom-Santelli, J., Muller, M. J., & Millen, D. R. (2008). Social tagging roles: Publishers, evangelists, leaders. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. Symposium conducted at the meeting of ACM.
- Torkzadeh, G., & Doll, W. J. (1999). The development of a tool for measuring the perceived impact of information technology on work. *Omega*, 27(3), 327–339.
- Toulmin, S. (1958). *The uses of argument*: Cambridge: Cambridge University Press.
- Treem, J. W., & Leonardi, P. M. (2013). Social media use in organizations: Exploring the affordances of visibility, editability, persistence, and association. *Annals of the International Communication Association*, 36(1), 143–189.
- Turban, E., Bolloju, N., & Liang, T.-P. (2011). Enterprise social networking: Opportunities, adoption, and risk mitigation. *Journal of Organizational Computing and Electronic Commerce*, 21(3), 202–220.
- Unify (2016). Circuit - The better way to work. Retrieved from <https://www.circuit.com/learn>
- Unify (2017). About Unify. Retrieved from <https://www.unify.com/us/about/company.aspx>

- Unify (2018). Circuit - the better way to work: Circuit provides a far more efficient and effective way to collaborate over using a multitude of disparate tools. See how ... Retrieved from <https://www.circuit.com/learn>
- Universität Hildesheim (2017). Unified Theory of Acceptance and Use of Technology. Retrieved from <http://cookiis.iis.uni-hildesheim.de/node/17>
- Urbach, N., Smolnik, S., & Riempp, G. (2010). An empirical investigation of employee portal success. *The Journal of Strategic Information Systems*, 19(3), 184–206.
- Van de Ven, A. H. (1989). Nothing is quite so practical as a good theory. *Academy of Management Review*, 14(4), 486–489.
- Van de Ven, A. H., & Poole, M. S. (2005). Alternative approaches for studying organizational change. *Organization Studies*, 26(9), 1377–1404.
- Van Kleef, G. A. (2009). How emotions regulate social life: The emotions as social information (EASI) model. *Current Directions in Psychological Science*, 18(3), 184–188.
- Van Osch, W., & Coursaris, C. K. (2013). Organizational social media: A comprehensive framework and research agenda. In *System Sciences (HICSS), 2013 46th Hawaii International Conference on*. Symposium conducted at the meeting of IEEE.
- Velasquez, A., Wash, R., Lampe, C., & Bjornrud, T. (2014). Latent users in an online user-generated content community. *Computer Supported Cooperative Work (CSCW)*, 23(1), 21–50.
- Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research*, 11(4), 342–365.
- Venkatesh, V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision Sciences*, 39(2), 273–315.
- Venkatesh, V., & Davis, F. D. [Fred D.] (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186–204.
- Venkatesh, V., & Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *MIS Quarterly*, 115–139.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. [Fred D.] (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 425–478.
- Verband der Hochschullehrer für Betriebswirtschaft e.V. (2015). VHB-JOURQUAL 3: Teilrating Wirtschaftsinformatik. Retrieved from https://www.vhbonline.org/fileadmin/user_upload/JQ3_WI.pdf
- Verdot, V., Christophe, B., Toubiana, V., & Beauvais, M. (2011). Scribee Experimentation-Early Statistics on Email Conversations. In *Proceedings of the 2011 IEEE/WIC/ACM International Conferences on Web Intelligence and Intelligent Agent Technology-Volume 03*. Symposium conducted at the meeting of IEEE Computer Society.
- Vom Brocke, J., Simons, A., Niehaves, B., Riemer, K., Plattfaut, R., Cleven, A., & others (2009). Reconstructing the giant: On the importance of rigour in documenting the literature search process. In *Ecis*.

- Walther, J. B. (1992). Interpersonal effects in computer-mediated interaction: A relational perspective. *Communication Research*, 19(1), 52–90.
- Walther, J. B. (1994). Anticipated ongoing interaction versus channel effects on relational communication in computer-mediated interaction. *Human Communication Research*, 20(4), 473–501.
- Walther, J. B., & D'Addario, K. P. (2001). The impacts of emoticons on message interpretation in computer-mediated communication. *Social Science Computer Review*, 19(3), 324–347.
- Walther, J. B., & Tidwell, L. C. (1995). Nonverbal cues in computer-mediated communication, and the effect of chronemics on relational communication. *Journal of Organizational Computing and Electronic Commerce*, 5(4), 355–378.
- Watzlawick, P., Weakland, J. H., & Fisch, R. (1974). *Change: Principles of problem formation and problem resolution*. New York: Norton.
- Webster, J., & Martocchio, J. J. (1992). Microcomputer playfulness: Development of a measure with workplace implications. *MIS Quarterly*, 201–226.
- Webster, J., & Watson, R. T. (2002). Analyzing the past to prepare for the future: Writing a literature review. *MIS Quarterly*, xiii–xxiii.
- Wehner, B., Ritter, C., & Leist, S. (2017). Enterprise social networks: A literature review and research agenda. *Computer Networks*, 114, 125–142.
- Weick, K. E. (1995). What theory is not, theorizing is. *Administrative Science Quarterly*, 40(3), 385–390.
- Wen, Z., Topkara, M., Cao, L., Lin, C.-Y., & Lai, J. (2012). How Multimedia in Enterprise Social Networks Matters to People's Performance. In *Multimedia and Expo Workshops (ICMEW), 2012 IEEE International Conference on*. Symposium conducted at the meeting of IEEE.
- Whatasoftware (2017). BlueKiwi - Overview. Retrieved from <https://www.whatasoftware.com/overview/collaboration-productivity-software/blueKiwi/MjMy>
- Whetten, D. A. (1989). What constitutes a theoretical contribution? *Academy of Management Review*, 14(4), 490–495.
- Wigand, R., Picot, A., & Reichwald, R. (1998). *Information, Organization and Management: Expanding Markets and Corporate Boundaries* (2nd ed.). Chichester: John Wiley & Sons.
- Wilde, T., & Hess, T. (2006). *Methodenspektrum der Wirtschaftsinformatik: Überblick und Portfoliobildung*.
- Wilde, T., & Hess, T. (2007). Forschungsmethoden der Wirtschaftsinformatik. *Wirtschaftsinformatik*, 49(4), 280–287.
- Williams, S., Hausmann, V., Hardy, C. A., & Schubert, P. (2013). Enterprise 2.0 Research: Meeting the challenges of practice. *BLED 2013 Proc*, 251–263.
- Wilson, P. (1991). *Computer supported cooperative work: : An introduction*: Springer Science & Business Media.

-
- Wojciszke, B., Bazinska, R., & Jaworski, M. (1998). On the dominance of moral categories in impression formation. *Personality and Social Psychology Bulletin*, 24(12), 1251–1263.
- Yin, R. K. (2014). *Case study research: Design and methods* (5. ed.). Los Angeles CA u.a.: SAGE Publ.
- Yoo, J. (2007). To smile or not to smile: Defining the effects of emoticons on relational outcomes. In *Annual meeting of International Communication Association Conference*, Chicago, IL.
- Zhang, J., Qu, Y., Cody, J., & Wu, Y. (2010). A Case Study of Micro-blogging in the Enterprise: Use, Value, and Related Issues. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 123–132.

10 Appendix

10.1 Appendix – Study 2

10.1.1 Details on integrated publication

Chapter 4 contains among minor adjustments and further discussions the word-by-word, complete actual content of the following “open access” publication of which I am the main author:

Oettl, C., Berger, T., Böhm, M., Wiesche, M., Krcmar, H., 2018. Archetypes of Enterprise Social Network Users, in: 51st Hawaii International Conference on System Sciences - HICSS.

We present the exact take-over positions from this publication within this thesis in Table 59.

Source in publication		Destination in thesis	
Chapter / Page	Details	Type of use	Destination
Abstract / p.2036	Complete section [Abstract]	Word-by-word, complete actual content	4.2 The study in a nutshell
1. Introduction / p.2036	Clause(s) [1; 9-19]	Word-by-word, complete actual content	4.3 Introduction
	Clause(s) [2]	Word-by-word, complete actual content.	1.1 Problem statement 3.1 Theoretical background 5.3.4.3 Differentiating the value contribution of ESN use
	Clause(s) [3]	Word-by-word, complete actual content.	3.1 Theoretical background 5.3.4.3 Differentiating the value contribution of ESN use
	Clause(s) [4]	Word-by-word, complete actual content.	1.1 Problem statement 3.1 Theoretical background 5.3.4.3 Differentiating the value contribution of ESN use

			7.6.2.3 Introducing the case
	Clause(s) [5,7]	Take-over of the general statement.	4.3 Introduction
	Clause(s) [6]	Word-by-word, complete actual content.	1.1 Problem statement 3.1 Theoretical background 7.6.2.3 Introducing the case
	Clause(s) [7]	Word-by-word, complete actual content.	1.1 Problem statement 3.1 Theoretical background 7.6.2.3 Introducing the case 8.5 Summary of study 5 – Organizational change associated with ESNs
	Clause(s) [8]	Almost the word-by-word, complete actual content with only minor changes in formulation.	1.1 Problem statement 3.1 Theoretical background 7.6.2.3 Introducing the case
2. Theoretical background / p.2037	Clause(s) [1-2;7-15]	Word-by-word, complete actual content.	4.4.1 Theoretical background
	Clause(s) [3-4]	Almost the word-by-word, complete actual content with only minor changes in formulation.	1.1 Problem statement 3.1 Theoretical background 5.3.4.3 Differentiating the value contribution of ESN use 7.3.3.2 Technology Acceptance Model

			8.1 Theoretical implications
	Clause(s) [5]	Almost the word-by-word, complete actual content with only minor changes in formulation.	4.4.1 Theoretical background 7.3.3.2 Technology Acceptance Model
	Clause(s) [6]	Almost the word-by-word, complete actual content with only minor changes in formulation.	1.1 Problem statement 3.3 Research agenda 5.2 Introduction
3. Research method / p.2037-2038	Complete section [3. Research method]	Word-by-word, complete actual content of entire chapter 3 Research method.	4.4.2 Research method
4. Results / p.2038-2043	Content under section [4. Results]	Word-by-word, complete actual content.	4.4.3 Results
	Complete section [4.1 Archetypes of ESN users]	Word-by-word, complete actual content with only minor changes in formulation.	4.4.3.1 Archetypes of ESN users
	Figure(s) [1]	Complete actual figure.	Figure 12 Archetypes of ESN users
	Table(s) [1-3]	Word-by-word, complete actual content.	Table 11 Coding categories for archetype characterization Table 12 Interviewees and their archetype characterization Table 13 Demographics by archetypes
	Complete section [4.2 Perceived values by archetypes]	Word-by-word, complete actual content.	4.4.3.2 Perceived values by archetypes
	Table(s) [4]	Word-by-word, complete actual content.	Table 14 Perceived added values by archetypes

	Complete section [4.3 Perceived obstacles by archetypes]	Word-by-word, complete actual content.	4.4.3.3 Perceived obstacles by archetypes
	Table(s) [5]	Word-by-word, complete actual content.	Table 15 Perceived obstacles by archetypes
5. Discussion / p.2043-2044	Content under section [5. Discussion]	Word-by-word, complete actual content.	4.4.4 Discussion
	Complete section [5.1 Implications for theory and practice]	Word-by-word, complete actual content.	4.4.4.1 Implications for theory and practice
	Textually described development path in last paragraph of section 5.1.	Depicted by an additional figure, not part of the publication	Figure 13 Development path of archetypes of ESN users
	Complete section [5.2 Threats for validity]	Word-by-word, complete actual content.	4.4.4.2 Threats for validity
6. Conclusion / p.2044	Complete section [6. Conclusion]	Word-by-word, complete actual content.	4.4.5 Conclusion

Table 59 Take-over positions from the publication **Archetypes of ESN Users**
Source: Own illustration

10.1.2 Personality Test – IT competence

You are being asked to take part in a research project conducted by the Technische Universität München in cooperation with COMPANY-NAME on the topic:

„Implications of Enterprise Social Networking on Different User Groups”

The aim of the study is to find out to what extent the change in the internal communication of the organization (through the introduction of a social software) is connected to affect the company's employees. In the first step we want to identify the IT competence of the employees within the organization. Therefore you are asked to complete the following questionnaire. Your participation will contribute to a better understanding of the individual IT competence of employees among different user groups within the organization. You may also gain a better understanding about your knowledge in information systems and technology.

This survey should only take approximately 10 minutes to complete.

All of your answers will be kept strictly confidential and results will be used anonymously, i.e. they will only be shared as a summary, not by department or individual. Your contact details are only used for the purpose of the survey. You are free to complete this survey or not. If you have any questions about the research or about the way the study is being conducted, feel free

to request more information by contacting Christian Oettl by email at c.oettl@tum.de or Thomas Berger (Student of TU München) by email at thomas.berger@in.tum.de.

Please return your completed survey until May 31th, 2015.

Thank you for taking the time to complete this survey. Your input is very valuable to us and greatly appreciated.

Please describe yourself by placing a check mark near the scale which is more applicable for you (only one check mark per question is allowed).

1. Personal information					
	Female			Male	
What is your gender?	<input type="radio"/>			<input type="radio"/>	
	<i>18-24</i>	<i>25-34</i>	<i>35-44</i>	<i>45-54</i>	<i>55 or older</i>
What is your age?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What is the highest degree or level of school you have completed? If currently enrolled, highest degree received?					
<i>High school or equivalent</i>	<input type="radio"/>				
<i>Vocational/technical school</i>	<input type="radio"/>				
<i>Bachelor's degree</i>	<input type="radio"/>				
<i>Master's degree / Diploma</i>	<input type="radio"/>				
<i>Doctoral degree</i>	<input type="radio"/>				
<i>Other</i>	<input type="radio"/>				

2. Knowledge of IT Management					
	<i>uninformed</i>			<i>very well informed</i>	
Indicate your level of knowledge about the current IT portfolio/strategies of your business unit?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Knowledge of Access to Information					
	<i>not knowledgeable</i>	<i>at</i>	<i>all</i>	<i>extremely knowledgeable</i>	
How knowledgeable are you in finding knowledge (e.g. experts, skills, information) <u>within</u> your organization?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How knowledgeable are you in finding knowledge (e.g. experts, skills, information) <u>outside</u> your organization?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Experience in IT Management and Projects					
	<i>never/ low</i>		<i>many times/ high</i>		
How experienced are you in general IT management?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often have you participated in and/or led IT projects?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Intentions to develop or use innovative IT					
	<i>very little extent</i>		<i>very great extent</i>		
To what extent do you intend to create or strengthen partnership/alliances with IT people within your organization?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To what extent do you intend to support/promote the use of IT in your division?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Knowledge and Experience about Social Networks					
	<i>not at all knowledgeable/ experienced</i>		<i>extremely knowledgeable/ experienced</i>		
What is your general knowledge/experience of private social networks (e.g. Facebook, Twitter, Xing, etc.)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What is your general knowledge/experience of enterprise social networks (e.g. ESN-NAME)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What is your general knowledge/experience of private instant messaging (e.g. WhatsApp, Facebook chat/messenger etc.)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What is your general knowledge/experience of enterprise instant messaging (e.g. MS Lync)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Knowledge of Applications and Technologies					
	<i>never heard</i>		<i>know about them in general</i>		<i>understand their value to the organization</i>
What is your general knowledge of desktop pc (e.g. Linux, Unix, MS Windows)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What is your general knowledge of server (e.g. Linux, Unix, MS Windows)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What is your general knowledge of Network (e.g. TCP/IP, Router, LAN, WAN, Firewall)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What is your general knowledge of office applications (e.g. MS Word, MS Excel, MS PowerPoint)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What is your general knowledge of multimedia?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What is your general knowledge of WWW?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What is your general knowledge of database management?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What is your general knowledge of application development?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What is your general knowledge of e-commerce?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What is your general knowledge of IT outsourcing?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10.1.3 Interview guide

Vorbemerkung

Zunächst erst einmal vielen Dank, dass Sie uns für dieses Interview zur Verfügung stehen. Wir führen derzeit an der TU München in Zusammenarbeit mit COMPANY ein Forschungsprojekt durch zum Thema:

„Implications of Enterprise Social Networking on Different User Groups“

Ziel der Untersuchung ist es herauszufinden, inwieweit die Änderung der internen Kommunikation durch die Einführung und Verwendung des sozialen Netzwerkes „ESN-NAME“ mit Auswirkungen auf die Mitarbeiter des Unternehmens verbunden ist, [wie sich deren Erwartungshaltung an das soziale Netzwerk darstellt und was der eigentliche Nutzen für die Mitarbeiter ist.]

Im Interview sollte es darum gehen, dass Sie uns Ihre Erfahrungen mit dem Einsatz des internen sozialen Netzwerkes („ESN-NAME“) schildern.

Für das Interview haben wir eine Zeitdauer von ca. 25 Minuten vorgesehen. Ein Teil der Fragen sind für den strukturierten Ablauf bereits in den mir vorliegenden Leitfaden festgehalten.

Selbstverständlich werden wir alles, was Sie im Verlauf des Gesprächs erzählen, vertraulich behandeln. Die Ergebnisse des Interviews werden bereits bei der Transkription durch uns anonymisiert, so dass niemand daraus auf eine bestimmte Person schließen kann. Sollte Ihnen eine gestellte Frage unangenehm sein, müssen Sie natürlich nicht darauf antworten.

Damit keine Informationen verloren gehen und eine präzise Auswertung möglich ist, möchte ich das Interview gerne aufzeichnen.

Sind Sie mit einer Aufzeichnung des Gesprächs einverstanden?

Haben Sie sonst noch Fragen, bevor wir anfangen?

Gut, dann können wir mit dem Interview beginnen.

Ton-Aufzeichnung starten!

Ich werde Ihnen zunächst ein paar Fragen zur Person stellen:

1. Einleitung

- Welche Position bzw. Funktion haben Sie im Unternehmen?
- Wie lange sind Sie schon im Unternehmen?
- Seit wann verwenden Sie das soziale Netzwerk „ESN-NAME“?
- Wie oft verwenden Sie dieses?
 - [ständig; mehrmals täglich, wöchentlich oder monatlich; sehr selten, etc.]

2. Aufgabenbezogene Verwendung des sozialen Netzwerkes

- a. Welche Arten von Arbeiten führen Sie durch?
- Wie würden Sie Ihre Tätigkeiten/Aufgaben klassifizieren?
 - Sind das eher Routineaufgaben (standard, wiederkehrend), eher projektbezogene (unterschiedliche / zeitlich begrenzt) oder kreative Aufgaben?
 - Erfordern Ihre Aufgaben generelles Wissen (organisierend, strukturierend) oder eher spezielles Wissen (Expertenwissen, Fachwissen)?
 - Erfordern Ihre Aufgaben direkte Kommunikation mit dem Endkunden oder mit Märkten/Vertriebseinheiten?
 - Unter welchen Geschäftsprozessen lassen sich Ihre Tätigkeiten einordnen?
 - Z.B.:
 - Mit welchen Daten arbeiten Sie hauptsächlich?
 - Finanzdaten, Konfigurationen, Entwicklungscodes, Software, Prozesse etc.?
 - Erfordert Ihre Arbeit viel Kommunikationsaufwand? Liegt dabei der Fokus auf der Kommunikation mit Führungskräften oder mit Mitarbeitern? Oder hält es sich die Waage?
- b. Hinsichtlich welcher Aufgaben unterstützt Sie dabei das soziale Netzwerk („ESN-NAME“)?

- Inwiefern ist es sinnvoll für die genannten Arbeiten das soziale Netzwerk („ESN-NAME“) zu verwenden? Und inwiefern sind die dabei gewonnenen Informationen für die Erledigung dieser genannten Arbeiten hilfreich?
 - Beispiele?
 - Wo hilft das soziale Netzwerk für die Erledigung geschuldeter Arbeit?]
- c. Hinsichtlich welcher Aufgaben unterstützt Sie das soziale Netzwerk („ESN-NAME“) derzeit nicht?
 - Warum? Was sind die Hindernisse?
 - Welche Potenziale sehen Sie?
 - Was würden Sie dahingehend anders machen oder sich für die Zukunft wünschen?

3. Personenbezogene Verwendung des sozialen Netzwerkes

- Welche Einstellung haben Sie persönlich zur Einführung und Verwendung des sozialen Netzwerkes („ESN-NAME“) im Unternehmen?
- Wie verwenden Sie das soziale Netzwerk („ESN-NAME“)? Verwenden Sie dies aktiv; das heißt, erstellen Sie selbst Beiträge in der Plattform oder beteiligen Sie sich lediglich passiv, sprich in lesender Form? Warum?
 - Wenn aktiv: Wurde die Plattform Ihrerseits zunächst nur passiv genutzt oder von Beginn an aktiv?
 - Wenn nur passiv: Gründe für alleinige passive Nutzung?
- Wie wichtig ist für Sie persönlich das soziale Netzwerk („ESN-NAME“) als Instrument der internen Kommunikation geworden?
- Welche Rolle werden Enterprise Social Networks (wie „ESN-NAME“) Ihrer Meinung nach in der Zukunft haben und inwiefern werden diese den Erfolg einer Firma beeinflussen?
- Durch die Verwendung des sozialen Netzwerkes („ESN-NAME“) werden Inhalte für Dritte im Netzwerk sichtbar gemacht. Die Aktivitäten und Beiträge einzelner Nutzer und deren Kommunikationspartner stehen den Mitarbeitern als Informationsquelle zur Verfügung. Inwiefern hat sich Ihr Metawissen (also Ihrem Wissen über das, was andere Wissen) für Sie persönlich ausgewirkt?
 - Können Sie benötigte Informationen, Inhalte oder Experten leicht finden?
 - Beispiele?

4. Möchten Sie zum Abschluss noch weitere Aspekte zum Thema ergänzen, die Sie für wichtig halten?

- a. Ist Ihnen während des Interviews noch etwas aufgefallen, dass ich beachten sollte?

10.2 Appendix – Study 3

10.2.1 Survey part 1

Question	Unit	Answer Type
Wie alt sind Sie?		Menu
Sind Sie männlich oder weiblich?		Menu
Wie lange sind Sie schon bei Atos bzw. einer der Vorgängerorganisationen beschäftigt?		Integer (number)
In wie vielen unterschiedlichen Projekten/Tätigkeitsfeldern waren Sie in Ihrem Werdegang bisher tätig?		Integer (number)
Wie gut fühlen Sie sich in Ihrem Unternehmen vernetzt?		Menu
Wie häufig nutzen Sie "blueKiwi" bei der Suche nach Experten?		Menu
Wie häufig nutzen Sie das "Intranet" bei der Suche nach Experten?		Menu
Wie häufig nutzen Sie das "Telefon" bei der Suche nach Experten?		Menu
Wie häufig nutzen Sie Ihr "persönliches E-Mail-Postfach" bei der Suche nach Experten?		Menu
Wie häufig nutzen Sie "Skype for Business" bei der Suche nach Experten?		Menu
Wie häufig nutzen Sie Ihr "persönliches Netzwerk" (z.B. direkter Kontakt zu einem Vorgesetzten) bei der Suche nach Experten?		Menu
Nutzen Sie auch Plattformen wie "XING" (oder ähnliche) zur Auffindung von Ressourcen bzw. Experten?		Menu
Wie häufig nutzen Sie "blueKiwi" bei der Suche nach Inhalten bzw. Informationen?		Menu
Wie häufig nutzen Sie das "Intranet" bei der Suche nach Inhalten bzw. Informationen?		Menu
Wie häufig nutzen Sie das "Telefon" bei der Suche nach Inhalten bzw. Informationen?		Menu
Wie häufig nutzen Sie Ihr "persönliches E-Mail-Postfach" bei der Suche nach Inhalten bzw. Informationen?		Menu
Wie häufig nutzen Sie "Skype for Business" bei der Suche nach Inhalten bzw. Informationen?		Menu
Wie häufig nutzen Sie Ihr "persönliches Netzwerk" (z.B. direkter Kontakt zu einer Führungskraft) bei der Suche nach Inhalten bzw. Informationen?		Menu
Wie häufig pflegen Sie Ihr Profil in der "My Professional Profile"-Datenbank?		Menu
Wie häufig pflegen Sie Ihr Profil in "blueKiwi"?		Menu
Wie schätzen Sie Ihre Kenntnisse im Umgang mit "blueKiwi" ein?		Menu
Wie hoch ist der blueKiwi/E-Mail-Anteil Ihrer internen Kommunikation?		Menu
Wie hoch SOLLTE der blueKiwi/E-Mail-Anteil Ihrer internen Kommunikation sein?		Menu
Verschweigen Sie bewusst Skills auf den Plattformen "blueKiwi" / "My Professional Profile", um bestimmte Aufgaben nicht ausführen zu müssen? Wenn ja, WELCHE?		Free text
Was würde Ihr Vorgesetzter sagen, wenn Sie via "blueKiwi" bezüglich eines Positionswechsels angesprochen werden würden?		Menu
Wie viele "Bid-Teams" haben Sie bisher zusammengestellt?		Menu
An wie vielen Einstellungsentscheidungen/Vorstellungsgesprächen waren Sie bisher beteiligt?		Menu

10.2.2 Survey part 2

Question	Unit	Answer Type
Tragen Sie den Startzeitpunkt für die Bearbeitung der ersten Aufgabe (Inhaltssuche) ein:		Date
Tragen Sie die URL/Prozesse der Checkliste zur technischen Vorbereitung der Arbeitsaufnahme (Einstand) neuer Kollegen in nachfolgendes Textfeld ein:		Free text
Tragen Sie den Endzeitpunkt der Bearbeitung der ersten Aufgabe (Inhaltssuche) ein:		Date
Tragen Sie den Startzeitpunkt für die Bearbeitung der zweiten Aufgabe (Expertensuche) ein:		Date
Tragen Sie die Namen der infrage kommenden DREI Experten (priorisiert) in nachfolgendes Textfeld ein:		Free text
Tragen Sie den Endzeitpunkt der Bearbeitung der zweiten Aufgabe (Expertensuche) ein:		Date
Konnten Sie die Aufgabe "Inhalte suchen" ohne Unterbrechung bearbeiten?		Yes/No
Wenn Sie bei der Aufgabe "Inhalte suchen" unterbrochen wurden, so geben Sie bitte die Dauer der Unterbrechung an:	Minuten	Free text
Konnten Sie die Aufgabe "Experte suchen" ohne Unterbrechung bearbeiten?		Yes/No
Wenn Sie bei der Aufgabe "Experte suchen" unterbrochen wurden, so geben Sie bitte die Dauer der Unterbrechung an:	Minuten	Free text

10.2.3 Survey part 3

Question	Unit	Answer Type
Wie schwierig war die Bearbeitung der Aufgabe "Inhalte suchen" für Sie?		Scale
Wie würden Sie Ihre Lösung zur Aufgabe "Inhalte suchen" bewerten?		Scale
Wie schwierig war die Bearbeitung der Aufgabe "Experte suchen" für Sie?		Scale
Wie würden Sie Ihre Lösung zur Aufgabe "Experte suchen" bewerten?		Scale
Haben Sie sonst noch Anmerkungen bzw. gab es Probleme bei der Bearbeitung der Aufgaben?		Free text

10.3 Appendix – Study 4

10.3.1 Survey

Within this section, we present the text of the different scenarios including the distribution of the smileys as used in the survey.

Text 1 (neutral):

Hallo Hr. Böhm,

ich möchte Sie kurz an die bevorstehende Vorstandssitzung am Dienstag erinnern. Die Analyse unserer aktuellen Quartalszahlen wird ein extrem wichtiger Tagesordnungspunkt dabei sein. Eine gute Vorbereitung darauf ist essentiell für unsere Firma.

Mit freundlichen Grüßen,

Markus Starke, Chief Executive Officer (CEO)

Text 1 (1 Smiley):

Hallo Hr. Böhm,

ich möchte Sie kurz an die bevorstehende Vorstandssitzung am Dienstag erinnern. Die Analyse unserer aktuellen Quartalszahlen wird ein extrem wichtiger Tagesordnungspunkt dabei sein. :-) Eine gute Vorbereitung darauf ist essentiell für unsere Firma.

Mit freundlichen Grüßen,

Markus Starke, Chief Executive Officer (CEO)

Text 1 (3 Smileys):

Hallo Hr. Böhm :-),

ich möchte Sie kurz an die bevorstehende Vorstandssitzung am Dienstag erinnern. Die Analyse unserer aktuellen Quartalszahlen wird ein extrem wichtiger Tagesordnungspunkt dabei sein. :-) Eine gute Vorbereitung darauf ist essentiell für unsere Firma. ;-)

Mit freundlichen Grüßen,

Markus Starke, Chief Executive Officer (CEO)

Text 2 (neutral):

Guten Tag Hr. Walter,

ich benötige von Ihnen bis nächsten Donnerstag eine fertige Ausführung der Zwischenergebnisse für unser aktuelles Projekt. Eine kurze Vorstellung per Powerpoint im Board-Meeting wäre wünschenswert. Ihr Einsatz für das Team ist bis jetzt vorbildlich, weiter so!

Viele Grüße,

Alexander Ehrenberger, Senior Vice President

Text 2 (1 Smiley):

Guten Tag Hr. Walter,

ich benötige von Ihnen bis nächsten Donnerstag eine fertige Ausführung der Zwischenergebnisse für unser aktuelles Projekt. Eine kurze Vorstellung per Powerpoint im Board-Meeting wäre wünschenswert. Ihr Einsatz für das Team ist bis jetzt vorbildlich, weiter so! :-)

Viele Grüße,

Alexander Ehrenberger, Senior Vice President

Text 2 (3 Smileys):

Guten Tag Hr. Walter :-),

ich benötige von Ihnen bis nächsten Donnerstag eine fertige Ausführung der Zwischenergebnisse für unser aktuelles Projekt. Eine kurze Vorstellung per Powerpoint im Board-Meeting wäre wünschenswert. :-) Ihr Einsatz für das Team ist bis jetzt vorbildlich, weiter so! :-)

Viele Grüße,

Alexander Ehrenberger, Senior Vice President

Text 3 (neutral):

Hallo Hr. Englbrecht,

seit letztem Montag häufen sich die Beschwerden hinsichtlich langsamer Zugriffszeiten auf unsere Internetseiten. Haben Sie schon eine Idee wie dieses Problem in den Griff zu bekommen ist? Wir können es uns nicht leisten ein paar Tage vor der Firmen-Messe deswegen an Prestige zu verlieren. Eine schnelle Bearbeitung wäre wünschenswert, ich setze mein Vertrauen in Sie!

Mit freundlichen Grüßen,

Maximilian Beck, Chief Operation Officer (COO)

Text 3 (1 Smiley):

Hallo Hr. Englbrecht,

seit letztem Montag häufen sich die Beschwerden hinsichtlich langsamer Zugriffszeiten auf unsere Internetseiten. Haben Sie schon eine Idee wie dieses Problem in den Griff zu bekommen ist? Wir können es uns nicht leisten ein paar Tage vor der Firmen-Messe deswegen an Prestige zu verlieren. Eine schnelle Bearbeitung wäre wünschenswert, ich setze mein Vertrauen in Sie! ;-)

Mit freundlichen Grüßen,

Maximilian Beck, Chief Operation Officer (COO)

Text 3 (3 Smileys):

Hallo Hr. Englbrecht :-),

seit letztem Montag häufen sich die Beschwerden hinsichtlich langsamer Zugriffszeiten auf unsere Internetseiten. Haben Sie schon eine Idee wie dieses Problem in den Griff zu bekommen ist? :-) Wir können es uns nicht leisten ein paar Tage vor der Firmen-Messe deswegen an Prestige zu verlieren. Eine schnelle Bearbeitung wäre wünschenswert, ich setze mein Vertrauen in Sie! ;-)

Mit freundlichen Grüßen,

Maximilian Beck, Chief Operation Officer (COO)

10.3.2 Visual depiction of the results

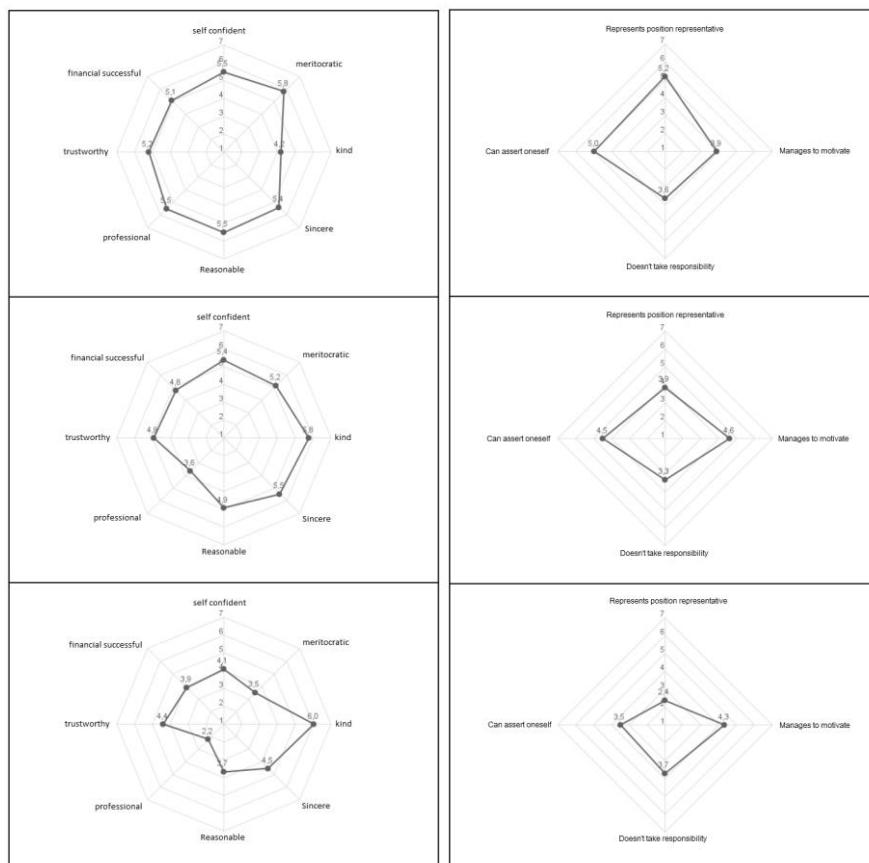


Figure 67 Ratings of perceived Characteristics from scenario 1 neutral (top), one Smiley (middle), three Smileys (bottom)

Source: Own illustration

10.3.3 Additional results - main part II

Professionalism: Here, more than half of the participants (65.4%) evaluated the influence of smileys as a strong to very strong negative impact on the perceived professionalism (rating 5, 6 & 7). 9.1% of the participants gave a moderate rating (rating 4). Little or no negative influence of smileys on the perceived professionalism was evaluated by 25.5% (rating 1, 2 & 3).

Sympathy: Overall, 47.3% of participants felt little or no negative influence in the use of smileys on the perceived sympathy of a superior (rating 1, 2 & 3). A moderate rating gave 16.4% of the participants (rating 4). A negative to very negative impact of smileys on the perceived sympathy felt 36.3% (rating 5, 6 & 7).

Authority: The influence of smileys on the perceived authority of an executive was seen by about 56.3% of all participants as rather negative to very negative (rating 5, 6 & 7). A moderate influence on the perception of authority was felt by 16.4% of the participants (rating 4). Similar to the perceived professionalism, not many participants thought that the use of smileys has little to no negative influence on the perceived authority (27.2%, rating 1, 2 & 3).

Confidence in the executive: The perceived confidence in an executive is rated in a similar pattern like in the perceived sympathy. Approximately half (50.9%) of the participants evaluated the influence of smileys on trust here with "little" to "no" (rating 1, 2 & 3). A moderate rating was given by 12.7% percent (rating 4), while 36.4% thought that smileys have a rather negative to very negative influence (rating 5, 6 & 7).

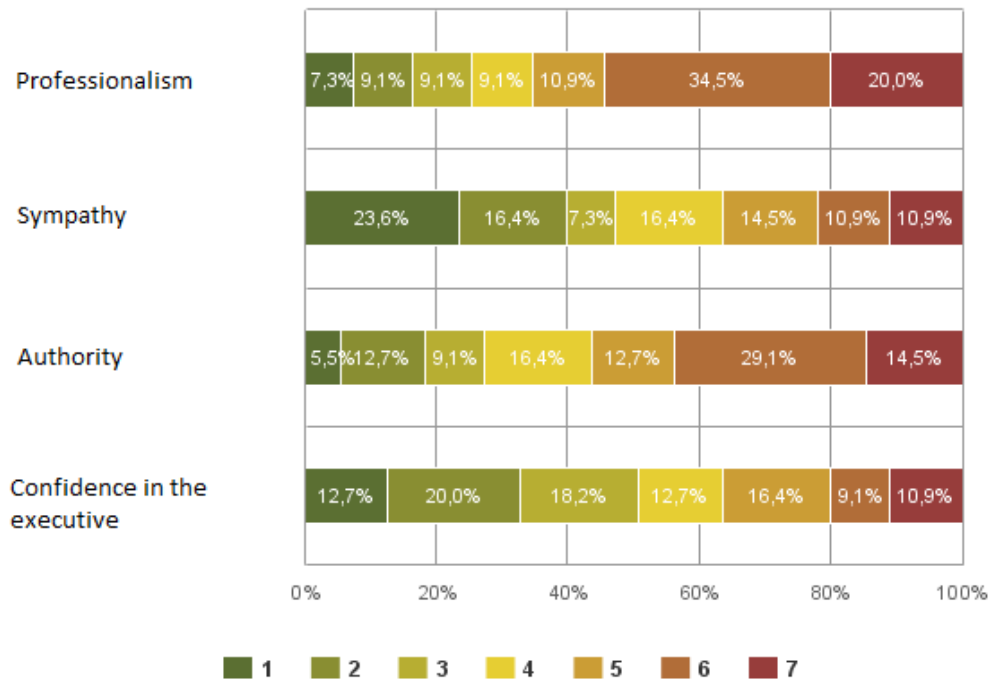


Figure 68 Results of the assessment of the effect of smiley usage of main part II, asking whether the use of smileys as an executive has a negative impact on the [Characteristic]? 1 (green): not at all – 7 (red): very strong
Source: Own illustration

In addition, we examined, if there were significant differences in the scores dependent on the age of the participants. We present the results in Figure 69.

First, we considered participants who were under 24 years old (N = 39, defined as age group 1). We compared age group 1 with age group 2 which we determined with participants who are between 25-59 years old (N = 16, age group 2). No significant differences could be found between age group 1 and age group 2. However, in age group 1, the negative impact of smileys on the perceived sympathy was on average less strong and the negative impact on the professionalism of the transmitter stronger. On average, participants of age group 2 stated a less negative influence of smiley usage on the professionalism of an executive. In the age group 1 only about 18% felt little or no negative impact on the professionalism by using smileys (rating 1 & 2), in age group 2 37.5 % felt this way.

Another difference was seen between the two age groups in analogy with the perceived sympathy, authority and confidence in the executive. Age group 2 evaluated the impact of

smileys on the three characteristics generally moderately. The sympathy scores indicate that younger people assess the perception of smileys as less negative.



Figure 69 Results dependent on age, participants 18-24 years old (top), 25-59 years old (bottom)
 Source: Own illustration

Dependent on the occupational status of the receiver, marked differences in the number of smileys used per email could be perceived. We present the results in Figure 70.

The majority of participants (66.7%) stated that they do not use smileys in an e-mail, if it would be addressed to an executive. 23.1% would use a smiley, 5.1% two, 2.6% three and 2.6% more than three. If the recipient of the e-mail would be an employee, the majority of the participants (56.4%) would use one smiley. 25.6 percent said they would use no smileys, 10.3% two, 5.1% three and 2.6% more than three Smiley.

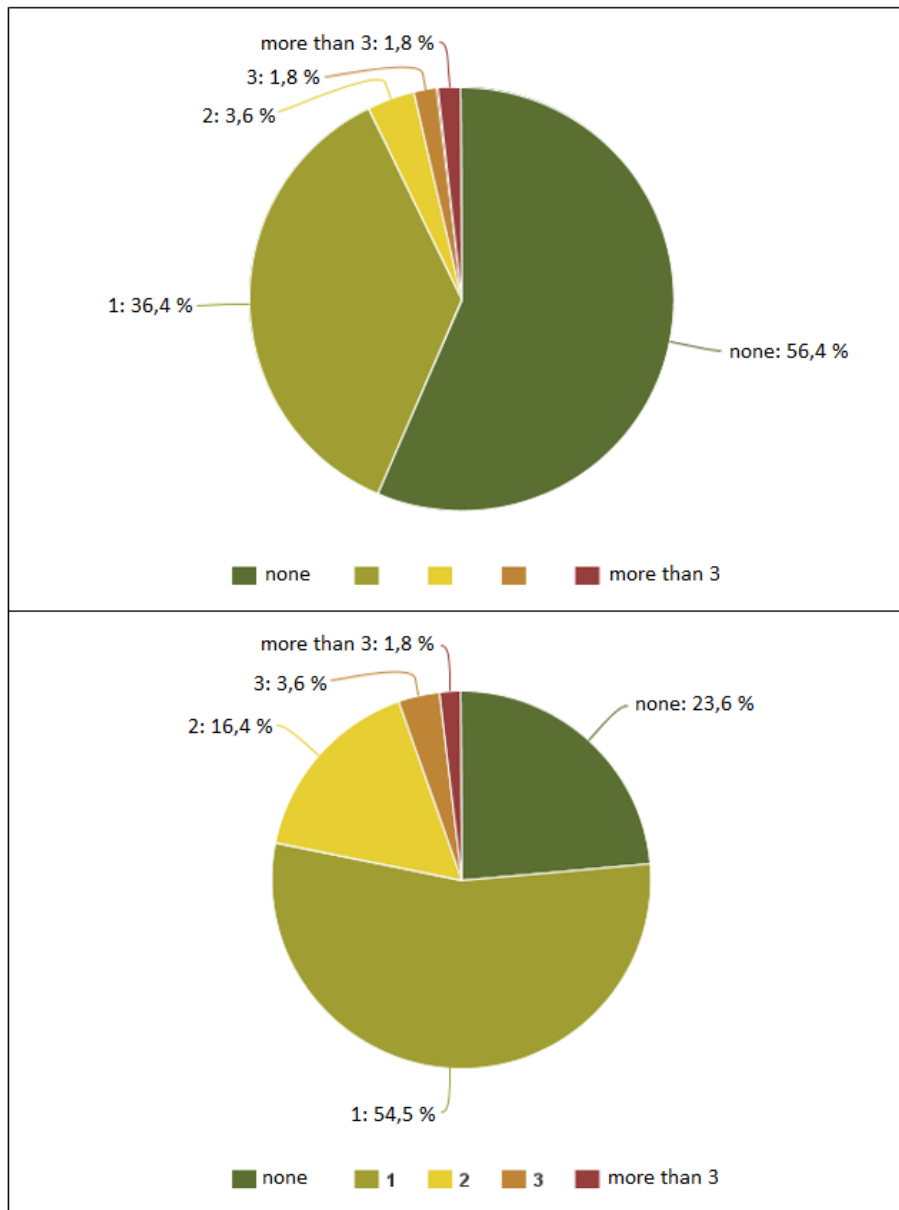


Figure 70 Number of smileys per e-mail to executives (top), employees (bottom)
Source: Own illustration

It was striking that the results of the age group 2 included not a single value that exceeded the use of one smiley when communicating with an executive. Overall, 31.3% would not use a smiley, the remaining participants only one smiley. In the age group 1 66.7% of the participants answered that they would not use a single smiley via e-mail communication with an executive.

21.3% would use a smiley. The remaining shares with two smileys correspond logically with values from the overall statistics.

Another question in the survey was, how often participants would personally use smileys in company-internal e-mails to executives or employees. The responses were similar to the pattern of the results to the number of used smileys per email. When communication via e-mail with executives, 36.4% would never, 21.0% almost never and 14.0% occasionally use smileys in an e-mail. The answers "often" or "always" were never selected. To employees however, only 9% would never and 15% would almost never use smileys. 15% communicate occasionally and 16% more often via smileys in e-mail. The answer option "always" was never selected.

Overall, 25.5% of the participants said that they had already experienced concrete situations in CMBC in which smileys have led to misunderstandings in communication. One problem that has been mentioned in several comments by the participants was the use of wink-smileys ";-)". In this case the ironic undertone that should be expressed by the use of smileys was misunderstood or interpreted wrong by the communication partner. Another problem posed typos, the lead to falsely used smileys and therefore the intention of the message has been corrupted. In addition, the improper placement of smileys has been listed in the context of the message as a possible cause for misunderstanding. One participant receives a mail with criticism on his work, but the e-mail has been dubbed with a ":-)" smiley face. At this point constructive, honest intentioned criticism would have been much more appropriate and would have made more sense according to the receiver's perspective.

10.4 Appendix – Study 5

10.4.1 Details on integrated publication

Chapter 7 contains, among further results, extensive discussions and vast complementary material, in chapter 7.6.2 the word-by-word, complete actual content of the following “open access” publication of which I am the main author:

Oettl, C. A., Beck, K., Rauffer, F. M., Priglmeir, A. T., Böhm, M., & Krcmar, H. (2018). Zero Email initiative: a critical review of Change Management during the introduction of Enterprise Social Networks. Journal of Information Technology Teaching Cases, 8(2), 172–183.

We present the exact take-over positions from this publication within Table 60.

Source in publication		Destination in thesis	
Chapter / Page	Details	Type of use	Destination
Abstract / p.172	Complete section [Abstract]	Word-by-word, complete actual content	7.6.2.1 The teaching case in a nutshell
Introduction / p.172-174	Clause(s) [1-13]	Word-by-word, complete actual content	7.6.2.2 Motivation

	Clause(s) [14-37]	Word-by-word, complete actual content.	7.6.2.3 Introducing the case
Context of the blueKiwi change / p.174-175	Complete section [Context of the blueKiwi change]	Word-by-word, complete actual content	7.6.2.3.1 Context of the blueKiwi change
	Figures(s) [Fig. 1-4]	Complete actual figure.	Figure 51 Teaching case structure “Email” Figure 52 Email traffic at Atos Figure 53 Time spent on emails Figure 54 Teaching case structure “blueKiwi”
The blueKiwi change / p.175- 177	Complete section [The blueKiwi change]	Word-by-word, complete actual content	7.6.2.3.2 The blueKiwi change
	Figures(s) [Fig. 5]	Complete actual figure.	Figure 55 Screenshot of blueKiwi
	Table(s) [1]	Word-by-word, complete actual content.	Table 49 blueKiwi's functionalities
Context of the Circuit change / p.177-179	Complete section [Context of the Circuit change]	Word-by-word, complete actual content	7.6.2.3.3 Context of the Circuit change
	Figures(s) [Fig. 6-7]	Complete actual figure.	Figure 56 blueKiwi developments Figure 57 Teaching case structure “Circuit”
	Table(s) [2]	Word-by-word, complete actual content.	Table 50 Comparison of blueKiwi and Circuit functionalities
The Circuit change / p.179- 180	Complete section [The Circuit change]	Word-by-word, complete actual content	7.6.2.3.4 The Circuit change
Understanding change / p.180- 181	Complete section [Understanding change]	Almost the word- by-word, complete actual content with only minor changes in formulation.	7.6.2.3.5 Understanding change
	Figures(s) [Fig. 8-9]	Complete actual figure.	Figure 58 Adoption / Innovation Curve

			Figure 59 Technology Acceptance Model
Questions for reflection / p.181	Complete section [Questions for reflection]	Word-by-word, complete actual content	7.6.2.3.6 Reflecting the case
Debate topic / p.181-182	Complete section [Debate topic]	Word-by-word, complete actual content	7.6.2.3.6 Reflecting the case

Table 60 Take-over positions from the publication integrated in study 7

Source: Own illustration

10.4.2 Interview guide – Study 5

10.4.2.1 Interview guide – integration strategy

Vorbemerkung:

Zunächst erst einmal vielen Dank, dass Sie uns für dieses Interview zur Verfügung stehen. Wir führen derzeit an der TU München in Zusammenarbeit mit ATOS ein Projektstudium durch zum Thema:

„Atos - Aufgriff der Zero Email Initiative:

Eine Fallstudie zu Organisationswandel und Diffusionstheorie“

Ziel der Untersuchung ist es herauszufinden, wie der Unternehmenskauf von Unify Anfang 2016 abgelaufen ist, aus welcher Intention das Unternehmen akquiriert wurde und welche Integrationsstrategie Atos daraufhin verfolgte.

Im Interview sollte es darum gehen, dass Sie uns den Ablauf des Unternehmenskaufs von Unify genauer schildern.

Für das Interview haben wir eine Zeitdauer von ca. 20 Minuten vorgesehen.

Selbstverständlich werden wir alles, was Sie im Verlauf des Gesprächs erzählen, vertraulich behandeln. Die Ergebnisse des Interviews werden bereits bei der Transkription durch uns anonymisiert, so dass niemand daraus auf eine bestimmte Person schließen kann. Sollte Ihnen eine gestellte Frage unangenehm sein, müssen Sie natürlich nicht darauf antworten.

Damit keine Informationen verloren gehen und eine präzise Auswertung möglich ist, möchten wir das Interview gerne aufzeichnen.

Sind Sie mit einer Aufzeichnung des Gesprächs einverstanden?

Haben Sie sonst noch Fragen, bevor wir anfangen?

Gut, dann können wir mit dem Interview beginnen.

Ton-Aufzeichnung starten!

Fragen zur Person

1. Welche Position bzw. Funktion haben Sie im Unternehmen?
2. Wie lange sind Sie schon im Unternehmen?
3. Wie waren Sie beim Unternehmenskauf von Unify eingebunden?
 - a. Waren Sie in die Entscheidung des Unternehmenskaufs involviert?
 - b. Was waren Ihre konkreten Aufgaben während des Unternehmenskaufs?
4. Haben Sie nach dem Unternehmenskauf die Integration weiter begleitet?

Unternehmenskauf

1. Warum wurde Unify gekauft? [Kunden kaufen, neue Lösungen integrieren, Marktpositionierung]
 - a. Was hatte der Kauf mit „Circuit“ zu tun?
 - b. Was hatte der Kauf mit der „Zero E-Mail Initiative“ zu tun?

Integrationsstrategie

1. Welche Integrationsstrategie wurde für den Unternehmenskauf von Unify gewählt? [Absorption, Symbiose (best of breed), Erhaltung]
2. Warum wurde diese Integrationsstrategie gewählt?
3. Wie sieht der Zeitplan der Integration aus?
 - a. Ist die Integration schon abgeschlossen?
 - b. Welche Maßnahmen laufen noch?

10.4.2.2 Interview guide – ESN use

Zunächst erst einmal vielen Dank, dass Sie uns für dieses Interview zur Verfügung stehen. Wir führen derzeit an der TU München in Zusammenarbeit mit ATOS ein Projektstudium durch zu dem Thema:

„Atos - Aufgriff der Zero Email Initiative:

Eine Fallstudie zu Organisationswandel und Diffusionstheorie”

Ziel der Untersuchung ist es herauszufinden, inwiefern Circuit genutzt wird, also welche Funktionen besonders wichtig sind, häufig genutzt werden, usw.

Im Interview sollte es darum gehen, dass Sie uns Ihre Einschätzung zur Nutzung des ESN in Bezug darlegen, mit dem Fokus auf Funktionalitäten, die besonders stark oder schwach genutzt werden.

Für das Interview haben wir eine Zeitdauer von ca. 15 Minuten vorgesehen.

Selbstverständlich werden wir alles, was Sie im Verlauf des Gesprächs erzählen, vertraulich behandeln. Die Ergebnisse des Interviews werden bereits bei der Transkription durch uns anonymisiert, so dass niemand daraus auf eine bestimmte Person schließen kann. Sollte Ihnen eine gestellte Frage unangenehm sein, müssen Sie natürlich nicht darauf antworten.

Damit keine Informationen verloren gehen und eine präzise Auswertung möglich ist, möchten wir das Interview gerne aufzeichnen.

Sind Sie mit einer Aufzeichnung des Gesprächs einverstanden?

Haben Sie sonst noch Fragen, bevor wir anfangen?

Gut, dann können wir mit dem Interview beginnen.

Ton-Aufzeichnung starten!

Fragen zur Person

1. Welche Position bzw. Funktion haben Sie im Unternehmen?
2. Wie lange sind Sie im Unternehmen?
3. Sind oder waren Sie in Entscheidungen involviert, die die Einführung, Verwaltung etc. eines bestimmten Circuit betreffen oder betroffen haben?

ESN-Nutzung

1. Wie stark wird Circuit im Arbeitsalltag genutzt?
 - a. In welchen Arbeitsbereichen wird es besonders stark genutzt?
 - b. In welchen besonders schwach?
2. Können Sie uns einen Überblick über die wichtigsten Funktionen von Circuit geben?
 - a. Wieso halten Sie diese Funktionen für besonders wichtig?
 - b. Was zeichnet diese Funktionen aus?
3. Werden manche Funktionen stärker genutzt als andere?
 - a. Welche Funktionen sind das?
 - b. Warum werden diese Funktionen Ihrer Meinung nach stärker genutzt?
 - c. Werden diese Funktionen in allen Arbeitsbereichen stark genutzt oder gibt es Unterschiede?
 - d. Wieso ist das Ihrer Meinung nach so?
4. Gibt es Funktionen, die kaum genutzt werden?
 - a. Welche sind das?
 - b. Wieso ist das Ihrer Meinung nach so?

- c. Werden diese Funktionen in allen Arbeitsbereichen schwach genutzt oder gibt es Unterschiede?
- d. Wieso ist das Ihrer Meinung nach so?

10.4.2.3 Interview guide – change management process

Wie läuft der Change Management Prozess bei der Integration des Enterprise Social Networks Circuit bei Atos ab und wie beeinflusst das die beiden Unternehmen Atos und Unify?

Vorbemerkung

Zunächst erst einmal vielen Dank, dass Sie uns für dieses Interview zur Verfügung stehen. Wir führen derzeit an der TU München in Zusammenarbeit mit ATOS ein Projektstudium durch zu dem Thema:

„Atos - Aufgriff der Zero Email Initiative:

Eine Fallstudie zu Organisationswandel und Diffusionstheorie”

Ziel der Untersuchung ist es herauszufinden, wie der Change Management Prozess bei der Integration des Enterprise Social Networks Circuit bei Atos geplant ist und wie die beiden Unternehmen Atos und Unify davon beeinflusst werden.

Im Interview soll es darum gehen, dass Sie uns den Integrationsprozess des ESN Circuit in Atos genauer schildern. Insbesondere ob nach einem Change Management Schema/ Model vorgegangen werden soll damit die Integration erfolgreich abläuft.

Für das Interview haben wir eine Zeitdauer von ca. 40 Minuten vorgesehen.

Selbstverständlich werden wir alles, was Sie im Verlauf des Gesprächs erzählen, vertraulich behandeln. Die Ergebnisse des Interviews werden bereits bei der Transkription durch uns anonymisiert, so dass niemand daraus auf eine bestimmte Person schließen kann. Sollte Ihnen eine gestellte Frage unangenehm sein, müssen Sie natürlich nicht darauf antworten.

Damit keine Informationen verloren gehen und eine präzise Auswertung möglich ist, möchten wir das Interview gerne aufzeichnen.

Sind Sie mit einer Aufzeichnung des Gesprächs einverstanden?

Haben Sie sonst noch Fragen, bevor wir anfangen?

Gut, dann können wir mit dem Interview beginnen.

Ton-Aufzeichnung starten!

Fragen zur Person

1. Welche Position bzw. Funktion haben Sie im Unternehmen?
 - a. Welche Aufgaben fallen in dieser Position an?

- b. Wie lange sind Sie im Unternehmen (seit 2009)?
2. Seit wann begleiten/ arbeiten sie an dem Change Management Prozess zur Integration des Enterprise Social Networks Circuit?
3. Haben Sie bereits bei der Integration von Bluekiwi mitgewirkt?
 - a. Welche Aufgaben haben Sie bei der Integration von Bluekiwi übernommen?
 - b. In welchem Zeitraum haben Sie dabei mitgewirkt?

Hintergrundinformationen zur Einführung des ESN

1. Soll am Ende nur ein Produkt aus den beiden ESNs (Bluekiwi und Circuit) entstehen?
 - a. Wie soll das Enterprise Social Network nach dem Integrationsprozess heißen?
 - b. Aus welchen Gründen entsteht daraus nur ein ESN? Weshalb werden nicht beide ESN beibehalten?
 - c. Weshalb soll daraus nicht nur ein ESN entstehen?
2. Wann soll der Prozess zur Einführung des Enterprise Social Networks beginnen?
3. Werden bestimmte Bluekiwi Funktionen durch Funktionen von Circuit zukünftig ersetzt?
 - a. Welche Funktionen werden ersetzt?
 - b. Welche Nachteile hatte die Bluekiwi Funktion?
 - c. Weshalb bietet die Lösung von Circuit in diesem Bereich eine bessere Lösung?
4. Werden bestimmte Circuit Funktionen nicht für die neue Enterprise Social Network Lösung benutzt?
 - a. Welche Funktionen werden ersetzt?
 - b. Weshalb werden sie nicht integriert?
5. Welche Bluekiwi Funktionen bleiben bestehen?
 - a. Weshalb bleiben diese Funktionen und werden nicht ersetzt?
 - b. Bietet Circuit hierfür keine/ eine schlechtere Lösung?

Der Change Management Prozess bei der Integration des Enterprise Social Networks

1. Steht der Kauf von Unify bzw. die Einführung von Circuit im Zusammenhang mit der Zero email initiative?
2. Soll die Einführung der neuen Funktionen gestaffelt oder als „Big Bang“ erfolgen?
3. Wird nach einem bestimmtem Change Management Model vorgegangen um die neuen Funktionen von Circuit bei Atos zu erfolgreich zu integrieren?
 - a. Weshalb wurde dieses Model gewählt?

- b. Wieso wurde kein Model gewählt? Wie soll stattdessen vorgegangen werden um eine erfolgreiche Integration zu gewährleisten?
4. Welche Schritte sind (in Anlehnung an dem gewählten Model) geplant um Circuit bei Atos einzuführen?
 - a. Zu welchem Zeitpunkt sind diese eingeplant?
 - b. Welche Vorteile bringt es mit sich die einzelnen Integrationsschritte so durchzuführen?
 - c. Gibt es auch Nachteile die sich durch die geplante Durchführung ergeben könnten?

Lehren aus dem Change Management Prozess von Bluekiwi

1. Wurde bei der Planung zur Integration von Circuit der Change Management Prozess bei der Integration von Bluekiwi als Vergleich herangezogen?
2. Wurde aus vorangegangenen Schwierigkeiten bei der Integration von Bluekiwi gelernt?
 - a. Was wurde daraus gelernt?
 - b. Welche Schritte wurden übernommen?
 - c. Welche Vorarbeit kommt dem neuen Change Management Prozess zu Gute?
 - d. Gab es gewisse Intitiativen / Projekte innerhalb des Change Management Prozesses bei bluekiwi die die Integration von einem neuen Enterprise Social Network bei Atos fördern werden?

10.4.3 Product description blueKiwi

Within this section, we provide an overview of the blueKiwi product which we retrieved 05.07.17, from <https://bluekiwi.io/product-2/>.

Activity streams

Stay up-to-date. Track what's happening across your enterprise social network or communities in real-time. Your activity stream is always up-to-date with the most recent posts, comments or other contributions.

Teamwork spaces

Create a public or private workspace or community for an organisational group, department or project, enabling cross functional sharing of information. At blueKiwi, we call them spaces.

Public and private messaging

Communicate with your network by sending messages to individual members or the entire community. Enhance the messages by adding links, attaching files, @mentions and much more.

Content sharing

Use blueKiwi to share information and content with your colleagues or community. Upload documents, videos, presentations, links and much more. Post notes to your content, add comments, tags, or whatever you need to make it more accessible to your social workplace.

Administration tools

Everything you need to keep your enterprise social network running smoothly. Use the administration console to manage user accounts or carry out system-wide account changes. Customise your enterprise social network colors, background image, email notifications and login page.

Analytics

Measure the health of your enterprise social network. See which online workspaces and users are the most active, discover trends and pinpoint key participants and conversations. Use the statistics to find what promotes engagement and what doesn't.

Security

Be secure. Designed from the ground up to ensure security and confidentiality, blueKiwi won't compromise the security of your network or data transversing the social network.

Mobility

Stay connected while on the move. Browse and search your community, send messages, answer questions and make comments from wherever and whenever, using the most popular smartphones or tablets on the market today.

Enhanced collaboration tools

Go beyond simple posting and commenting with our enhanced collaboration tools. These tools increase not only increase individual productivity, they also improve and simplify the social collaboration process.

Enterprise integration

blueKiwi is only one component of a vast internal and external IT ecosystem. That's why we've made it easy to seamlessly integrate the blueKiwi enterprise social network into the familiar look and feel of your corporate branding, applications and IT security controls.