Motivators and barriers to internal, social media-based open innovation communities in financial services

A case study focusing on participant perception

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<th>Definition</th>
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<tbody>
<tr>
<td>BSH</td>
<td>Bausparkasse Schwäbisch Hall</td>
</tr>
<tr>
<td>C1sf</td>
<td>Community 1 service functions</td>
</tr>
<tr>
<td>C2mf</td>
<td>Community 2 market functions</td>
</tr>
<tr>
<td>CAI</td>
<td>Computer Aided Innovation</td>
</tr>
<tr>
<td>CC</td>
<td>Conclusion</td>
</tr>
<tr>
<td>CIO</td>
<td>Chief Information Officer</td>
</tr>
<tr>
<td>IP</td>
<td>Intellectual Property</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>OI</td>
<td>Open Innovation</td>
</tr>
<tr>
<td>PC</td>
<td>Personal Computer</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and development</td>
</tr>
<tr>
<td>RP</td>
<td>Research Proposition</td>
</tr>
<tr>
<td>RQ</td>
<td>Research Question</td>
</tr>
<tr>
<td>RSS</td>
<td>Really Simple Syndication</td>
</tr>
<tr>
<td>SME</td>
<td>Small Medium Sized Enterprise</td>
</tr>
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</table>
Certificate of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Charles Sturt University or any other educational institution, except where due to acknowledgement is made in the thesis. Any contribution made to the research by colleagues with whom I have worked at Charles Sturt University or elsewhere during my candidature is fully acknowledged. I agree that this thesis be accessible for the purpose of study and research in accordance with the normal conditions established by the Executive Director, Library Services or nominee, for the care, loan and reproduction of theses.

[Signature]
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This dissertation was edited under the utilisation of an academic proofreading service of Cambridge Editors (CE). The editing was limited to formatting, grammar and style. The proofreading services are described under the following URL:

http://cambridgeeditors.com/
Ethics

This research involved human participants. It conforms to the Australian National Statement on Ethical Conduct in Research Involving Humans and required approval from the Human Research Ethics Committee.

The CSU Human Research Ethics Committee (HREC) has approved this research under the protocol number 2014/086.

The consent and information sheets for the participants are listed in Appendix E and F.
Preface

Some chapters in this work have been published previously, and were presented as part of the following conferences:

1. S-BPM ONE 2013 – Running Processes, 5th international Conference in Deggendorf, Germany

2. AKWI 2014: Processes, technology, applications, systems and management in Regensburg Germany

The relevant sentences, which are presented in identical form, can be found in chapters one (introduction), three (methods) and four (data analysis).
Abstract

This research provides a conceptual approach to establishing virtual, internal open innovation (OI) communities by crowdsourcing expert participants from specialist areas, business and IT (Information Technology), utilising as much value-creating knowledge as possible. It focuses on participants’ motivations, researching motives and barriers in the cultural, organisational and strategic context of a market-leading financial service provider in Germany.

The research has been conducted as a case study using different qualitative methods. It is based on motivational theories by Herzberg and Wunderer & Küpers and the body of knowledge in the field of OI communities. By integrating both motivational and demotivational factors as well as behavioural expectations of participants towards innovation management roles, it tries to deliver an integrated approach to the complex topic of motivation in internal open innovation communities based on social media technologies.

The research design is strongly anchored in constructivism due to the qualitative nature of the research questions. The individual research steps follow a rigorous process design, determined by a conceptual framework with two research propositions derived in advance from academic literature. Each research step and its analysis was recorded using QSR NVivo 10 qualitative research software, which also generated the reports for the research results.

The research contributes to the knowledge of motivation in OI by extracting and ranking motivators and barriers of an internal community-based innovation management process. Moreover it highlights the different needs and expectations of participants towards innovation management roles. It also provides a theoretical contribution through the comparison of different motivation theories in an internal OI setup. Finally, it delivers a methodological contribution through the applicability of the case study design and its methods to other industries and contexts.
1 Introduction

1.1 Industrial background

The financial service industry in Germany is driven by an efficiency-oriented process of change, which is known as the industrialisation of financial services. Competition with online banks, international banks and so-called non- and near-banks, such as Volkswagen Bank, is constantly rising. New banking approaches like the Web 2.0-based social lending company SMAVA are challenging traditional banks. As the first German online marketplace for social loans, SMAVA transfers the idea of socially oriented private moneylending to the internet. In addition, new payment methods such as PayPal threaten classical banking business models, simplifying shopping processes via the Internet by combining different services into easily consumable value offerings (von der Ahe, 2007, p. 3).

These services and intelligent comparison portals are pacesetters in an increasingly competitive market environment. As a consequence of the increasing price transparency provided by the Internet, traditional financial service providers are faced with the challenge of either reducing product costs through standardisation or creating innovative products to differentiate their product portfolios (Kurzweil, 2012, p. 2).

In addition we see a behavioural change in the latest generation of customers, the so-called “digital natives”. Having grown up with technologies like smartphones and tablets, digital natives expect easy-to-use digital services and want to be entertained. Information technology is once again a decisive competitive factor.

However, as a result of enormous cost-cutting initiatives accelerated by different market crises in recent years, most financial service providers have outsourced their information technology (IT) departments and have lost uncomplicated interaction with this
important production factor. Increasingly, even strategic parts of IT have been outsourced into legally independent subsidiaries.

Most German banks, such as Bausparkasse Schwäbisch Hall or Deutsche Bank, source their IT services from a highly diversified global service industry.

For the outsourced IT department, this usually means a tremendous disconnect from its customers on the business side, leading to typical customer-provider relationships which are subject to formal regulations. This commonly results in a loss of business knowledge, since it complicates methods of cooperation and leads to communication problems and misunderstandings.

Due to a lack of IT-related skills, business customers have difficulties speaking the more formal language of IT. On the other hand, the IT department often forgets to think and act like a bank. It is not uncommon for these interface problems to lead to large IT projects being scrapped before they add any value. Thus IT gains a reputation for being expensive, complex and unable to deliver on time (Quack, 2010, p. 1).

To minimise these risks, significant investments have been made in establishing better planning and estimation processes; however, these long-term planning processes are significant barriers to IT innovation, as they do not contribute to the rapid development of new technologies or focus on the bank customers’ expectations. In addition, shorter technology lifecycles – associated with the exponential growth of available technologies – further increase modern customers’ expectations. Despite a lack of self-confidence, IT is searching for new ways to satisfy its business customers (Quack, 2010, p. 2).

The chief information officers (CIOs) of larger financial service providers have recognised the need for innovation. Therefore, they are fostering the installation of systematic and sustainable innovation
management processes to ensure it receives the attention it deserves.

1.2 Derivation of research questions
A promising process approach towards successful innovation way of innovating engages is based on virtual OI communities. These are described as open because they do not usually stop at the corporate limits of a company, instead specifically networking with value chain partners outside the company or business domain. Integration of customers plays an important role here, as customers often have specific information about product and service needs. More broadly, OI processes often include research institutions, technology licensor or intermediaries, such as the members of the online innovation platform Innocentive.com, which companies can use to post innovation challenges to be solved by registered experts across the world in exchange for reputation and money (Buchwald, 2007, p. 8).

Practical challenges
The successful establishment of internal online innovation communities between business and IT departments is a major opportunity for the author’s company and the industry as a whole, as it allows virtual asynchronous cooperation between internal and external innovators (i.e., at different locations and times). Nevertheless, initial experiments have highlighted some challenging practical problems (explained and numbered below using the abbreviation PP and an index number).

One challenge with such a method of cooperation seems to be integrating the right people into the process (PP1). Initial process iterations have shown that it is difficult to get access of the right experts in the long term. After a couple of interactions, there is a creeping exodus of skills to other, often more urgent projects.

An innovation expert for the Swiss Post reported on a pilot experiment with 200 users where, in spite of good testing conditions,
it was impossible to establish a self-organising idea community on a
social networking platform. He refers in particular to cultural factors,
which he believes to be the main barriers to active participation in an
online community (PP2) (Brugger, 2010, p. 77).

A similar test in the author’s company with a smaller group of people
produced similar findings, although different patterns of behaviour
and motivations were seen (PP3). Software developers, for example,
started using the platform significantly earlier than non-technical staff.
Like in the Swiss Post study, it was also found that the size of the
community and the associated social benefits affects the probability
of using the platform regularly.

It was also observed that employees might be unsure about the
quality of their posts and their colleagues’ reactions (PP4).

Employees were also concerned about using the platform within
official working hours, due to a lack of time and uncertainty over
whether it was supported by higher management (PP5). Some
employees were unable to use the platforms during working hours
due to heavy workloads, while others did not want to risk using it
unproductively while possibly observed by other colleagues.

Unlike classical open source communities, the direction and
management of these innovation communities are in companies’
hands. Pilots have shown that management intervention (e.g., in
directing the ideation process) confused participants (PP6).

The employee council is another major issue surrounding social
media platforms. (PP7). Union rules forbid asking employees for
photos or other private information such as skill details for later
publication on social media platforms.
Research questions

Guided from the above practical problems the following research questions have been derived (abbreviated via RQ and an index number).

RQ1: Why does motivation decrease during the idea generation process within internal, social media-based open innovation communities?

RQ2: How can we win back lost motivation in such an innovation management setup?

<table>
<thead>
<tr>
<th>Practical problem</th>
<th>RQ1</th>
<th>RQ2</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP1: Integration of the right people</td>
<td>Strong influence observed</td>
<td>Search area: way of selecting participants</td>
</tr>
<tr>
<td>PP2: Insufficient self-organisation and self-motivation</td>
<td>Strong influence observed</td>
<td>Search area: cultural environment</td>
</tr>
<tr>
<td>PP3: Different behavioural patterns of participants</td>
<td>Some influence observed</td>
<td>Search area: cultural and relationship environment</td>
</tr>
<tr>
<td>PP4: Uncertainty concerning the reaction of others</td>
<td>Some influence observed</td>
<td>Search area: cultural and relationship environment</td>
</tr>
<tr>
<td>PP5: Time pressure and uncertainty, whether participation is backed by the higher management</td>
<td>Strong influence observed</td>
<td>Search area: working environment</td>
</tr>
<tr>
<td>PP6: Confusion about management intervention by directing the idea process</td>
<td>Strong influence observed</td>
<td>Search area: cultural environment</td>
</tr>
<tr>
<td>PP7: Union aspects, employee council</td>
<td>Some influence observed</td>
<td>Search area: relationship environment</td>
</tr>
</tbody>
</table>

1.3 Justification of the research

As already shown during the derivation of the research questions this research is driven by a practical problem. It tries to find out how experts in financial services, already featured with excellent working conditions, can be motivated to participate voluntarily in internal, virtual innovation communities which are driven by social-media
technology. Induced by unexpected failure during prior attempts it tries to develop a holistic motivation approach integrating motivators and barriers as well as management behaviour on the basis of case study research.

The research contributes to the knowledge of motivation in OI by extracting and ranking motivators and barriers of an internal community-based innovation management process driven by social-media technology. Moreover it highlights the different needs and expectations of participants towards innovation management roles. It also provides a theoretical contribution through the comparison of different motivation theories in an internal OI setup. Finally, it delivers a methodological contribution through the applicability of the case study design and its methods to other industries and contexts.

1.4 Methodological overview

The research has been conducted as a single case study using different qualitative methods such as questionnaires, paperwork and in-depth interviews. It is based on motivational theories by Herzberg and Wunderer & Küpers and the body of knowledge in the field of OI communities. By integrating both motivational and demotivational factors as well as behavioural expectations of participants towards innovation management roles, it tries to deliver an integrated approach to the complex topic of motivation in internal open innovation communities based on social media technologies.

The research design is strongly anchored in constructivism due to the qualitative nature of the research questions. The individual research steps follow a rigorous process design, determined by a conceptual framework with two research propositions derived in advance from academic literature. Each research step and its analysis was recorded using QSR NVivo 10 qualitative research software, which also generated the reports for the research results.
The embedded units of analysis will be represented by two different internal innovation communities on different social media software platforms. Participants of both communities were experts in their particular fields of work which are all related to innovation.

The communities were hosted within different companies in the BSH Group. Thus participants displayed different business functions, stages of professional development, ages and genders.

1.5 Outline of the thesis

This DBA thesis contains six chapters: 1) Introduction, 2) Literature review, 3) Research methodology, 4) Results, 5) Discussion and 6) Conclusion and further prospects.

Chapter One – Introduction

Chapter one includes the industrial background and explains the derivation of the research questions from a practical point of view and with reference to relevant literature. It also contains general background information, the justification of the research and an overview of the methodology as well as definitions and key terms. It ends with sketching the scope and key assumptions.

Chapter Two – Literature review

The literature review locates this research within Open Innovation followed by a managerial and organisational view on this research. Subsequently the theoretical underpinnings of motivation and demotivation are extracted and composed to a conceptual framework which spans the theoretical roof over the entire research process. It ends with a conclusion and the derivation of the two central research propositions.

Chapter Three – Research methodology

This chapter outlines the implemented research methods. It locates the qualitative research design within the paradigm of constructivism
and explains why the case study method is an appropriate approach to the given research problem. Moreover it highlights the rationale for a single case design with two embedded units of analysis. These units are provided by two different virtual innovation communities which serve as the central anchor of this qualitative research. The chapter ends with the presentation of the data analysis process.

Chapter four – Results

The chapter “results” starts with the perception of the surrounding conditions of the community members. In a next step the motives of community members are exposed within theoretically anchored classifications. It presents qualitative and quantities statements previously drawn from questionnaires and in-depth interviews.

The chapter ends with the presentation of perceived barriers which are, in analogy to the motives, ordered within theoretically derived classifications. It also presents qualitative and quantities statements previously drawn from questionnaires and in-depth interviews.

Chapter five – Discussion

Chapter five mainly reflects the presented data of chapter four by testing these results against the underlying theoretical concepts of motivation and demotivation within such an innovation environment. In doing so it highlights implications for innovation management practice and theory. It extracts anchor points for future research and shows the limitation of this research.

Chapter six – Conclusion and future prospects

This chapter briefly describes the research problem, the research goals, the methods and the main results. It contains future directions for research based on the findings of this study.
1.6 Definitions and key terms

This research is dominated by a specific understanding of the OI concept and its application within internal innovation communities.

Möslein and Neyer describe OI as a continuum between open and closed innovation. The degree to which the process is open to different groups of co-operators depends on the strategy of the process owner. They differentiate three different kinds of actors in OI: core innovators, peripheral innovators and external innovators. Core innovators are typically part of R&D or marketing and directly dedicated to product and service development. Peripheral innovators are employees who are not officially assigned to innovation tasks, but due to their intrinsic motivation they are deeply committed to innovation. These actors are often insufficiently integrated into the innovation process, and thus do not have access to relevant toolkits and knowledge. External innovators are not located within the company. Customers, providers, value partners and research institutes are increasingly adopting this role. These innovators can be integrated via the OI approach (Möslein & Neyer, 2009, p. 91).

Taking this into account and following the community construct of West and Lakhani an internal innovation community can be described as a "...voluntary association of actors united by a shared instrumental goal, creating, adapting, adopting or disseminating innovations which are brought to market or widespread use by commercial actors" (West & Lakhani, 2008, p. 224).
1.7 Scope and key assumptions

Methodological limitations:

This reliance to just one case with a small number of participants may seem vulnerable because of the limited space for generalising the findings for many or all cases and participants. It is important to consider that the chosen research design aims to discuss the underpinning theories and concepts and does not claim the generalisation of results. This is a clear limitation in terms of reusing the findings for the whole industry. Instead, the research is based on the weaker claim that the validity of one or more theories must hold even for a small number of cases and participants.

Limitations in scope concerning the innovation management process:

In accordance to Durst and Durst the understanding of the innovation management process of this research follows an integrated approach which starts with an environmental analysis of trends and market conditions as well as the evaluation of available technologies. This analysis leads to so called opportunity spaces for new products and services and builds the starting point of the ideation process ending in an innovation roadmap (Durst & Durst, 2016, p. 221, see also chapter 2.2). This research has a clear focus on the ideation sub-process within the above concept. Moreover it excludes the sub-processes: 1=strategic, environmental scanning, 2=exploration, 3=testing/prototyping, 5= implementation/roadmapping to explicitly focus on the research questions and the derived scope of observation.
2 Literature Review

To develop a structure for the literature review, it is important to identify the disciplines involved in business research. The parent discipline is OI theory, as described in the introduction. The core discipline is innovation management, and particularly the organisation of OI communities. As the research questions address motivational and behavioural aspects of the roles involved, the boundary of the sub-discipline is the motivation of participants in OI communities.

Figure 1: Model showing boundaries of involved business disciplines

The first step is to understand the theoretical underpinnings of the OI concept. Questions about the origin of OI, the efficiency and the effectiveness of OI processes and the degree of openness must be answered. In addition, virtual OI communities must be placed within the wider OI theory (see sections 2.1 and 2.1.1).

Next, it is important to consider the contextual aspects of OI in banking as a traditional service industry. It is interesting which firms benefit from OI, what size they are, what they have in common and, as OI is strongly associated with product innovation, whether it is also useful for the service industry (see section 2.1.2).
Third, the organisational and managerial implications have to be determined. Therefore, it is important to classify different kinds of online communities and to derive appropriate organisational principles for these constructs. It is also necessary to examine the knowledge flows in innovation management and to identify which knowledge capabilities are vital for OI. Communication is also important (see section 2.2).

Finally, the theory of motivation and demotivation must be discussed and transformed into a research framework. To do so, it is necessary to discuss the occurrence of intrinsic (from individuals themselves) and extrinsic (from outside, for example company incentives) motivational factors in an OI environment. As extrinsic motivational factors are strongly linked with corporate culture, a deeper discussion of the role and impact of cultural barriers is needed to link scientific knowledge to the research questions (see sections 2.3 and 2.4).

Figure 2: Model showing the core topics of the literature review
2.1 Locating this research within OI

The economist Joseph Schumpeter introduced the concept of innovation in the first half of the last century. In his theory of economic development, he defined innovations as technical and organisational changes in the production process which lead to commercial advantage (Schumpeter, 1962, p.12).

The scope of the current understanding of innovation ranges from creating new products and services to the introduction of new production methods. The development of new procurement and sales markets and the creative design of new business models are also understood as innovations (Wittman, Leimbeck, & Tomp, 2006, p. 11).

Innovation is also defined as “the introduction of changes in management, work organization, the working conditions and the skills of the workforce” (Fasnacht, 2009, p. 37).

Therefore, innovation can be abstractly defined as a change-based approach in which the expertise of the company is increased to gain a competitive advantage.

Three management approaches are actually applied as industry standards to handle innovation: the employee suggestion, continuous improvement and innovation management (Krämer & Höhn, 2010, p. 73).

Employee suggestion

An employee suggestion system is used to support the continuous improvement of products and services but also to improve working processes within the company. It belongs to the discipline of classical idea management. Employees are invited to develop creative ideas, often outside their working domains. They are asked to describe these ideas and present proposals about realising them, along with arguments on the costs and benefits for the company. Coordinators
often work as idea brokers. The focus is short to medium term. Successful ideas are usually rewarded monetarily. The frequency of input is not explicitly controlled.

**Continuous improvement**

Continuous improvement is a process that addresses improvements within the scope of employees’ expertise. It belongs to the discipline of classical idea management. Employees are invited to develop creative ideas inside their working domain. They are asked to describe these ideas and present proposals about realising them, along with arguments on the costs and benefits for the company. There are usually defined roles and responsibilities within the process. The focus is short to medium term. Successful ideas are usually not rewarded, due to the assumption that every highly skilled employee is interested in achieving better performance. The frequency of input is usually dictated by key performance indicators such as the number of ideas submitted per team.

**Innovation management**

The innovation management process is not one of classical disciplines of idea management. Instead, it is part of research and development management (R&D management). Involving highly skilled experts, the process aims to create strategic competitive advantages. The process is often structured and moderated and focuses on different fields of innovation which closely align with overall business strategy. Intellectual attributes such as pride and reputation are usually the incentive, rather than monetary rewards. The frequency of input is carefully controlled, along with all the subsequent stages of the process.

Within innovation management the concept of Open Innovation (OI) plays an important role. OI has become one of the most popular concepts in innovation management over the last couple of years. A Google Scholar search for “open innovation” in May 2013 returned
2.2 million articles and books. Thus much research has been conducted since the publication of Chesbrough’s famous 2003 book, *Open Innovation: Researching a New Paradigm*.

Defining OI as “the use of purposive inflows and outflows of knowledge to accelerate internal innovation and expand the markets for external use of innovation” Chesbrough suggests that firms should use both external and internal sources of ideas, rather than classical, more closed, approaches to R&D which only exploit internal sources. In addition, internal concepts which do not support the company’s core business strategy can be spun-off, for example to find external uses for internal technology (Chesbrough, Vanhaverbeke, & West, 2008, p. 1).

This naturally implies an aggressive change in how intellectual property is handled.

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**Figure 3: The Open Innovation model**

Overcoming corporate boundaries means networking with value chain partners outside the corporate boundaries of an organisation. This interactive value creation process is a cooperative and voluntary cooperation between manufacturers and customers or other partners. External ideas can often provide very important contributions; for example, customers often have the best
understanding of their own requirements. Customer-centric or customer-initiated innovations have a greater chance of success, thanks to steadily declining technology costs, which make it possible to innovate on extremely technical equipment despite relatively little expert knowledge.

This is also stimulated by improved communication facilities and global access to innovations, or at least modifiable innovation components. This movement has been described as “the democratization of innovation” (Hippel, 2005, p. 121).

The following two perspectives help simplify the otherwise complex OI concept: The conceptual perspective addresses what OI is about, while the contextual perspective investigates in which branches and strategic contexts OI can be successfully implemented.

2.1.1 Conceptual aspects

According to Reichwald and Piller, OI processes reduce time-to-market periods and cost-to-market ratios thanks to their openness and more efficient inflow and outflow of knowledge. OI also provides a high potential for products to be new to market and to fit into the market (Reichwald & Piller, 2009, p. 150).

These assertions are supported by Bae and Chang and Schweitzer, Gassman and Gaubinger, who used quantitative methods to demonstrate that OI increases innovation efficiency. They included factors such as number of patents, profits and effectiveness, expressed via indicators which encapsulated the achievement of innovation goals, for example “replacing an existing product” (Schweitzer, Gassmann, & Gaubinger, 2011, p. 1202; Bae & Chang, 2012, p. 974).

Lazzarotti and Marzini define the term “innovation funnel openness” as the number and type of phases in the innovation process which are open to external contributions. They assert that the innovation process can be opened in stages and to a variety of different
participants. Integrated contributors are often found in companies with lower partner heterogeneity, while specialised contributors are often found in companies with higher partner variety (Lazzarotti & Manzini, 2009, p. 623)

Huizingh differentiates between inbound, outbound and coupled process designs. Inbound OI entails the internal use of external knowledge, while outbound OI involves external exploitation of internal knowledge. The frontier between open and closed innovation is described as a continuum with varying degrees of openness. Huizingh also distinguishes between the openness of the process itself and openness of the outcome of the process. For example, open source innovation, a particular variety of OI, is open in both respects (Huizingh, 2011, p. 3).

Dahlander suggests two pairs of dimensions to classify the openness of processes, namely inbound vs. outbound and pecuniary vs. non-pecuniary processes, which leads to the following matrix (Dahlander & Gann, 2010, p. 702):

Table 2: Dahlander’s different types of openness in OI

<table>
<thead>
<tr>
<th>Pecuniary</th>
<th>Inbound innovation</th>
<th>Outbound innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-pecuniary</td>
<td>OI acquiring</td>
<td>OI selling</td>
</tr>
<tr>
<td></td>
<td>OI sourcing</td>
<td>OI revealing</td>
</tr>
</tbody>
</table>

These four different types will now be examined in detail to locate the research problem within the wide field of OI.

OI acquiring vs. OI selling:

OI acquiring means licensing technologies or buying outside knowledge via classical market-based approaches. This can include licensing IP, innovation components or even acquiring a whole company. This is possible because, in the outbound direction, OI selling creates many new technologies which are not relevant to companies’ core business and are thus available on so-called innovation markets. This has the advantage that unused IP can be
made to pay instead of languishing unused, allowing the selling companies to offset their annual R&D spending. Chesbrough argues that this grows a company's ecosystem, potentially leading to spin-offs and further growth options (H. W. G. Chesbrough, 2009, p. 71).

Lichtenthaler ascribes a growing importance to such innovation markets and refers to “innovation intermediaries”, who handle innovation components between the inventing companies. (Lichtenthaler & Lichtenthaler, 2009, p. 87). In reference to so-called “solver brokerages”, Feller, Finnegan, Hayes and O'Reilly illustrate how such intermediaries establish new delivery models on virtual innovation platforms and thus accelerate the growth and strategic relevance of innovation markets (Feller, Finnegan, Hayes, & O'Reilly, 2012, p. 221).

**OI-sourcing vs. OI-revealing**

Highlighting the so-called “innovation mill process”, Hossein supports the idea of building an ecosystem around a company via OI revealing (Hossain, 2012, p. 768). For example, as part of a systematic process Nokia searches for innovation components which do not support its core business and releases them to start-up companies, leading to significant economic returns. OI revealing can also help to set new market standards, reduce support costs or change market rules in general (Goldman & Gabriel, 2005, p. 6).

In traditional industries such as banking, where OI is not a prerequisite, a smooth and controllable entrance into the world of OI is particularly crucial. This is aided by OI sourcing, which focuses on a free and non-pecuniary inflow of external knowledge, beginning at the core of the company and proceeding stepwise through the firm's organisational culture (Mortara & Minshall, 2011, p. 595). When combined with typical web 2.0 technologies, OI sourcing can be described as OI crowdsourcing. Marjanivic, Fry & Chataway identify crowdsourcing as an up-and-coming approach to OI, defining it as an
[...] effort to leverage the expertise of a global pool of individuals and organisations, often across disciplines and sectors, generally enabled by the web, to as quickly as possible and cost-effectively develop and implement creative solutions to innovation challenges.

Marjanovic, Fry, & Chataway, 2012, p. 321

**OI instruments and their interplay**

OI crowdsourcing involves an interplay of different OI tools. Embedded into the innovation markets described above, OI crowdsourcing employs further important OI instruments, as explained by Habicht, Möslein and Reichwald: innovation awards, innovation communities, innovation technologies and user toolkits.

Broadcast searches are the most important part of innovation awards in this context. Here, so-called “seekers” publish innovation challenges on platforms to be solved by a solver crowd, which is typically organised as an innovation community. These communities allow interested participants to develop, discuss and evaluate innovation ideas. Broadcast searches can have a pecuniary or non-pecuniary dimension, so the distinction between OI sourcing and OI acquiring is liquid. A major challenge of broadcast searches is formulating the innovation problem in a way that a lot of solvers can understand and be motivated to participate in. At the same time, it is necessary to avoid leaking strategic knowledge and to stay ahead of the community’s innovation direction (Habicht, Möslein, & Reichwald, 2011, p. 45).

The key enablers for this method of innovating are new web 2.0 technologies, so-called “computer-aided innovation tools” (CAI 2.0), that open access for internal and external actors by offering networking and social media facilities and user toolkits which can be used for prototyping or other methods of contributing to the innovation process (Reichwald & Piller, 2009, p. 167; Hüsig & Kohn, 2011, p. 411).
Although these instruments can be used to speed up the innovation process, they can also increase typical OI risks. It has been shown that the complexity of openness can negatively affect costs and innovation time within innovation processes (Praest Knudsen & Bøtker Mortensen, 2011, p. 63). Huizingh identifies loss of internal knowledge as an important consideration, as all participants will gain deep insights into a company’s strategic innovation strategy and its technological expertise. This seems very comprehensive, and it might be almost impossible to partially close an OI setup. Once it is open, each attempt to close it can negatively affect participants’ willingness to cooperate.

In addition, spinning off technologies as part of outbound side processes may tie up important capacities in non-strategic initiatives (Huizingh, 2011, p. 3).

**OI actors**

Möslein and Neyer differentiate three different kinds of actors in OI: core innovators, peripheral innovators and external innovators. Core innovators are typically part of R&D or marketing and directly dedicated to product and service development. Before the OI era these departments were seen as “closed shops”, often located...
beneath top management. But nowadays they are open to collaboration with different kinds of partners around the globe.

Peripheral innovators are employees who are not officially assigned to innovation tasks, but due to their intrinsic motivation they are deeply committed to innovation. These actors are often insufficiently integrated into the innovation process, and thus do not have access to relevant toolkits and knowledge.

External innovators are not located within the company. Customers, providers, value partners and research institutes are increasingly adopting this role. These innovators can be integrated via the OI instruments explained above, which are typically hosted on a company’s corporate website and launched and maintained by the marketing department (Möslein & Neyer, 2009, p. 91).

In summary, OI is a continuum between open and closed innovation. The degree to which the process is open to different groups of co-operators depends on the strategy of the process owner. Internal OI crowdsourcing provides an opportunity for increased openness in the innovation process and is an appropriate and up-to-date starting point, even for traditional industries such as banking.

2.1.2 Industrial contexts
According to Barge-Gil, large firms with a higher absorptive capacity tend to adopt OI processes better than smaller ones. He shows that despite a higher need for outside knowledge, smaller and less R&D intensive companies often a very low capacity to absorb this knowledge, and thus decide on a closed setup (Barge-Gil, 2010, p. 597).

With reference to empirical studies, Huizingh also reports that OI is better adopted by larger companies (Huizingh, 2011, p. 5). He finds that product innovations are more often subject to OI than process innovations, because knowledge about internal organisational procedures is rarely accessible to outside innovators. He suggests a
company's high exposure to globalisation, technology and new business models are the key factors, along with the skill level of the industry. Although there are some industries which are not suitable candidates for OI – such as the military or nuclear industry – he finds industrial context has no significant effect on applying OI.

This is also supported by Reichwald and Piller, who abstract the concept of OI into the term “interactive value creation” and illustrate via cases from markedly different industries that OI processes can lead to shorter time-to-market periods and lower cost-to-market ratios (Reichwald & Piller, 2009, p. 150).

Based on a field study of 101 companies, Schweitzer, Gassmann and Gaubiger assert that OI strategies are effective in overcoming the challenges of turbulent and technology-driven markets.

Gassman forecasts a shift in OI from product-oriented companies to the service sector, which in developed countries is the largest sector. With reference to Amazon’s Elastic Cloud Computing, he illustrates that OI provides enormous opportunities for the service industry, but it is still underrepresented in both research and practice (Gassmann, Enkel, & Chesbrough, 2010, p. 217).

According to Chesbrough, the service industry is generally in an early stage of OI adoption. This is caused by the necessity that the service business affords a very close cooperation with customers sharing both, knowledge and innovation outcome. Another major barrier is that services are often bundled with products. Thus there are neither sales incentives on services nor separate pricing models (Chesbrough, 2011, p. 89).

Romero and Molina show that the problem of service co-creation lies in providing an environment where the customer can learn about or test new services. This is due to the intangible nature of services. To close this gap, Romero and Molina suggest using intelligent
information and communication technologies (ICT) for virtual service co-creation (Romero & Molina, 2011, p. 457).

The financial service industry is also influenced by the OI paradigm. In a preliminary holistic discussion, Fastnach focuses on OI in the context of the financial service industry, showing how it can address the steadily increasing expectations of today's sophisticated customers by integrating them into the development of new services. (Fasnacht, 2009, p. 38).

This is also supported by Hirsch, who investigates how OI has been used to open up the development of innovative banking web services in the German corporate banking sector (Hirsch, 2009, p. 38).

Finally, Chaston quantitatively demonstrates that financial advisers involved in OI activities perform better (Chaston, 2013, p. 646).

In summary, it seems that OI can be transferred to larger firms in the financial service industry, even though they are still in an early stage of adoption. The strong involvement of customers plays an even more important role in service innovation than in product innovation, and is more complex due the intangible and often product-related nature of services. To overcome this challenge, new communication technologies and user toolkits are needed. Deeper and more technically ambitious integration of participants into the process requires consideration of the “human factor”. Thus the motivational and cultural factors which influence OI processes are of particular interest.

2.2. Managerial and organisational perspective

Following Chandler the organisation of an enterprise strictly follows its strategy. In order to cut transaction costs and to exploit the existing business model the organisation focuses on highly efficient processes and delivery structures. But the adjustment to rapidly changing markets and customer expectations affords new capabilities to create future growth options (Chandler, 1962, p.13).
O’Reilly & Tushman (2013, p. 330) suggest to strive for the creation of organisational ambidexterity as “…the capability which is necessary to compete in new markets and technologies that enable the firm to survive in the face of changed market conditions.“

In this conjunction Teece et al. (1997, p. 516) define dynamic capabilities as „the firm’s ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments.“ Based on these change management capabilities an enterprise is able to exploit the existing business model and to systematically reach new innovation goals in parallel.

Peter Drucker, founder of management theory, was the first to suggest bringing innovative change processes under systematic control. He defines innovation management as the systematic management of ideas and urges treating this process like any other corporate function (Drucker, 2002, p. 95).

In accordance to Durst and Durst the understanding of the innovation management process of this research follows an integrated approach which starts with an environmental analysis of trends and market conditions as well as the evaluation of available technologies (fuzzy front end). This analysis leads to so called opportunity spaces for new products and services and builds the starting point of the ideation process ending in an innovation roadmap. (Durst & Durst, 2016, p. 221)
The different stages of this process can be understood as sub-processes.

The first sub-process identifies trends and environmental changes as well as new technological developments from an inside-out perspective. It is the front end of the process and it integrates strategic aspects into so-called opportunity spaces of innovation. This will be important to inspire and limit the later ideation process.

The second sub-process is called “idea generation” or “ideation”. It typically begins with a broadcast search and aims to generate as much information about customer needs and solutions as possible. This information will generally be textual descriptions of customer requirements.

The next sub-process “the exploration” involves turning these vague ideas into specific concepts. It is characterised by consolidating and combining ideas. It also rejects ideas which do not meet the strategic requirements identified in the first stage.

The fourth sub-process is about testing innovations by “prototyping”. Prototypes contain all the relevant functions or components of the
final product or service. The innovation will be tested to reduce the risk of commercialisation and to test the acceptance and performance before beginning final implementation. The process can also lead to changes and improvements in the product or service and provides hints for subsequent marketing.

Within the last stage, the innovation implementation and road-mapping, the final product or service-configuration will be determined due to the outcome of the predecessor. A roadmap can help to achieve a structured overview of implementation projects over time. It includes different perspectives such as market, product, technology and resources.

Stage-gate processes are characterised by well-defined transitions from one stage to another. There is typically a set of conditions which must be fulfilled to pass each gate and enter another stage. However, in innovation processes these conditions either do not exist or are rather fuzzy, because it is often impossible to determine the criteria for a successful product in advance. Thus, the maturity of an innovation is often subject to a rather fuzzy assessment by the community and management. Sometimes ideas or early innovations need further development before they will attract users. Further discussions or prototyping are necessary to move an innovation idea to the next stage. This requires a flexible process design which expands the classical stage-gate process into a more iterative learn-and-probe design (Gassmann et al., 2010, p. 216).

![Figure 5: The iterative process design between stages](image-url)
This research has a clear focus on the ideation process within the above concept. Moreover it excludes the sub-processes 1, 3, 4 and 5 to focus on the research questions and the derived scope of observation.

The following subsections describe the different capabilities needed to operate such a sub-process in a virtual OI environment via online communities. The first subsection will investigate the management of these online communities. The second will discuss the meaning of knowledge and communication to determine the preconditions for distributed learning. Finally, the third subsection will discuss the role of social media technology in OI.

2.2.1 Innovation communities

The success of the open source movement (with Linux as the most prominent example) has proven that distributed online communities can create, shape and disseminate technological innovations. Thus online innovation communities are one of the most attractive organisational approaches for establishing an OI ecosystem to connect the different actors. This subsection will review the academic literature to elucidate the definition and successful organisation of these innovation communities.

Definition and appearances of innovation communities

To unpack the community construct in the specific context of OI, West and Lakhani list quite different kinds of communities such as innovation communities, technical communities, knowledge producing communities, online communities, scientific communities, user communities, virtual communities and communities of practice. When it comes to OI, however, they consider a community to be a

…voluntary association of actors, typically lacking a common organisational affiliation (i.e., not working for the same firm) but united by a shared instrumental goal, in this case creating, adapting,
adopter or disseminate innovations which are brought to market or in widespread use by commercial actors.

West & Lakhani, 2008, p. 224

This definition describes a free innovation community and appears to be the earliest appearance of the community construct.

Separately, there are sponsored communities which typically fall into one of four categories: value networks, co-reaction communities, intermediate communities and internal communities. All four are supported by paid staff, platforms and tools.

If a community is only made up of companies, the suggestion is to instead use the term “value network”, although there is an overlap between these and innovation communities. Value networks aim to foster business-to-business innovation or promote industrial standards as prerequisites for further innovations (West & O’mahony, 2008, p. 164; West & Lakhani, 2008, p. 224).

Co-creation platforms mainly involve external innovators, particularly users, by integrating them directly into product development (see www.spreadshirt.com). Intermediate platforms, as described earlier, are located in so-called innovation markets and are exclusively for external innovators (see www.innocentive.com).

Internal communities are the most different kind of community as they only involve core and peripheral innovators from within a company. They are embedded within a company's organisation and corporate culture. Thus every participant works for the same company and is influenced by its specific environment, e.g., day-to-day routines and work processes. Clearly these kinds of constructs require different approaches to organisation and management. The following factors must be considered when establishing sponsored innovation communities.
Strategic and cultural factors

Firms try to guide and control sponsored communities, with different levels of success. One of the major challenges finding shared interests and benefits. The shared interest of a community might not automatically match a firm’s strategic objectives. The company may see unpredicted developments as a waste of time and resources. Engaging with communities runs the risk of investing in an undirected and evolving innovation ecosystem rather than an innovation process aligned with a well-planned innovation strategy (West & O’mahony, 2008, p. 162).

Therefore, it is important to define goals and interests which can be shared by all participants. Companies should develop a strategy which establishes what success and failure of the community will look like well in advance, along with corrective measures for if the community moves in an undesirable direction (Naslund, 2010, p. 38). Naslund suggests establishing ownership for the community which draws a social network together and serves as a hub for other stakeholders. She also advocates for a coordination and maintenance strategy, which plans budgets and software support and nominates moderators to keep the community going. This also includes content planning, which means considering what type of content will be appropriate and the specifics of the content itself in terms of deliverables to and from the community. Naslund also recommends offering training and supportive communication materials, as these can help future participants integrate into the community environment and learn community expectations. She further advocates for establishing cross-functional support which takes into account which areas of the business should be integrated, how responsibilities between these areas should be regulated and how the necessary resources for all the above activities should be allocated.
Both Tickle, Adebanjo and Michaelides and Keinz, Hinerth and Lettl also recommend a dedicated community management which considers culture and social media technology, particularly collaboration tools (Tickle, Adebanjo, & Michaelides, 2011, p. 307; Keinz, Hinerth, & Lettl, 2012, p. 31).

In opposition to Naslund, Tickle, Adebanjo, Michaelides, Keinz, Hinerth and Lettl, Bruns presents four fundamental principles of using social media for innovation management, stressing the self-governing potential of communities.

First, he argues for being open to a growing population, which implies increased diversity. This diversity can be culturally challenging, but Bruns claims it is crucial for the inflow of new knowledge and ideas. New contributors naturally replace older ones, and under ideal conditions knowledge will be transferred and enriched by this procedure. Bruns states that social media communities are “stable if the influx of new and the disappearance of old users are in reasonable balance”.

He recommends that community management observe this process, but he discourages direct intervention. If intervention does become necessary, Bruns states it must be as transparent and honest as possible, providing the best information available. He strongly advises swallowing corporate pride and accepting critical comments gracefully, acting on the problems behind such incidents instead of intervening disruptively.

Second, he suggests supporting any efforts towards self-moderation, self-organisation and the building of social structures, aims and values within the community. To support this, initiators should set expectations surrounding behaviour, ground rules and set a good example.

Third, Bruns suggests site operators should engage emerging and established community leaders as partners in the process of
developing a community to a higher degree of maturity. This partnership may range from beta testing new content to formally employing these partners as moderators while ensure their standing in the community is not damaged. Managing the relationships between maintainers and community leaders is a key factor in the prosperity of a community.

Finally, Bruns strongly recommends avoiding community exploitation. Functioning social media spaces have a strong sense of common intellectual property (IP), loyalty and pride. It is therefore crucial to avoid any suggestion of overruling the community or intervening awkwardly in decision making processes, particularly trying to limit the community’s ability to influence how content can be used or whether content can be changed, revised or deleted. This can be avoided by using Creative Commons licenses or other agreements as part of a transparent IP strategy. Unilateral optimisation of benefits at the community’s expense will hamper community evolution (Bruns, 2010, p. 310).

Organisational factors

Lakhani and Panetta expound some basic principles of organising a successful community. The crucial difference between classical management and community management is voluntary participation and self-selection of tasks. Each member can decide which tasks they will carry out based on their own skills and preferences.

The managerial role involves allocating tasks and supporting the process of matching tasks with contributors in a simple and low-cost manner. Reducing barriers to entry will expand the community and increase the likelihood of success.

In this context the authors stress that management should set a clear granularity and diversity of tasks to increase participation. The stronger the granularity and diversity of tasks, the more likely it is a
contributor will participate. This important factor is presented as part of the architecture of participation (Lakhani & Panetta, 2007, p. 107).

In reference to so-called “communities of practice” West and O’mahony suggest that collective problem solving and the creation of joint artefacts are the cornerstones of interaction. But how can a variety of different skills be integrated?

Dahlander, Frederiksen and Rullani explain the concept of the architecture of participation by suggesting that the architecture should provide the opportunity to integrate various individually developed components of knowledge. This provides the contributors a certain leeway in terms of their deliverables. They also suggest an effort-driven approach rather than simply focusing on previously designed deliverables. However, they also stress the supportive impact of contributors’ self-responsibility and self-identification as suppliers of services in a market, which creates a healthy culture of competition.

In open source communities, these services include contributing code, reporting and fixing bugs, requesting new features, architectural and design discussions and decisions, documenting, designing and creating graphical user interfaces, translating interfaces into different languages and the simple user support (Dahlander, Frederiksen, & Rullani, 2008, p. 117; West & O’mahony, 2008, p. 162).

Lakhani and Panetta emphasise that the design of this architecture should precisely cover that part of the value creation process which is subject to an information problem and thus could be exposed to computer-based co-creation platforms (Lakhani & Panetta, 2007, p. 107).

Both Gemünden, Salomo and Hölzle and Batistella and Nonino set out a basic set of supporting roles in the innovation process which
are helpful for all different kinds of innovation processes (Gemünden, Salomo, & Hölzle, 2007, p. 412; Battistella & Nonino, 2013, p. 232):

The champion: a person who is able to support the innovation process thanks to their outstanding reputation or image.

The power promoter: the key person supporting the initiative from a higher hierarchical level.

The expert promoter: the key person supporting the initiative via their technical skills.

The process promoter: a process expert linking decision makers and experts.

The technology-related relationship promoter: a person linking external cooperation partners to the process.

The market-related relationship promoter: a person who supports the process with market-related expertise.

The opponent: a person who challenges innovation initiatives to increase the quality of their output.

Hirsch and Greiner confirm some of these roles by observing two virtual innovation communities in financial services. Based on qualitative research, they carried out an experiment to identify these roles via observation and in-depth interviewing, resulting in the following roles (Hirsch & Greiner, 2013, p. 203):

The management promoter (power promoter): primarily responsible for financial resources and eliminating barriers.

The innovation manager (process promoter): primarily responsible for the innovation challenge, communication and the architecture of participation.
The moderator (facilitator and relationship promoter): primarily responsible for integrating participants and knowledge flow.

The process and platform maintainer (process promoter): primarily responsible for maintaining the technical platform and social media functionality.

The cultural supporter (relationship promoter): primarily responsible for the community culture.

The participant (expert promoter): primarily responsible for delivering ideas and content.

It is necessary to create and carefully support an OI culture to stimulate a community process. This sub-section shows that a completely new understanding of the management disciplines of planning and organisation is necessary.

Trust in the community is particularly necessary to foster principles like self-selection of task or self-moderation. It must be ensured that the community is not subject to abuse. Cultural rules established by management and the community can balance these different factors and are fundamental to building mutual trust between the participants and the innovation management team.

In summary internal innovation communities connected via social technologies are an organisational approach to develop dynamic capabilities and to handle organisational ambidexterity in the sense of the introduction of this section. As social technologies aim to improve communication and cooperation between participants it seems to be important to get clear about the decisive role of communication skills in such an environment.

2.2.2 Knowledge factors and communication capabilities
OI can also be defined as systematically exploring, retaining and exploiting knowledge both inside and outside
an organisation’s boundaries via the innovation process (Lichtenthaler, 2011, p. 90).

Looking at the preconditions for OI, especially for firms within traditional industries, Spithoven and Knockhaert argue that so-called “absorptive capabilities” play an important role. Like Cohen and Levinthal, they define absorptive capability as the “ability of a firm to recognise the value of new, external information, to assimilate it, and to apply it to commercial ends”. They argue that small and medium sized enterprises (SMEs) and firms within traditional industries often lack these competencies due to lower investment in R&D, and argue that these capabilities must be established. However, instead of building such competencies internally, it may be reasonable to employ external technology intermediaries as a service (Spithoven, Clarysse, & Knockaert, 2011, p. 11; Cohen, Wesley M. & Levinthal, Daniel A., 1990, p. 149).

Boundary spanning is another factor in absorptive capacity. With reference to Fleming and Waguespack, Habicht defines this competence as the ability to combine different technical languages and patterns of thought across different industries to reach a shared understanding within an innovation community. This allows the knowledge from related markets and technological areas to be transformed and integrated into a company’s strategic innovation fields. He argues that informal networks frequently take on the task of boundary spanning, but there are also innovation setups where this is done by dedicated facilitators within the company (Habicht & Möslein, 2011, p. 10; Fleming & Waguespack, 2007, p. 165).

Bogers and Lhuillery show that organising absorptive capacity is a complex process involving every department in a firm, not only R&D. They assert that R&D is primarily about absorbing knowledge from public research institutions, whereas manufacturing should absorb supplier knowledge for product innovation and competitor knowledge for process innovation and marketing should absorb customers and
competitors’ knowledge about product and process innovation (Bogers & Lhuillery, 2011, p. 603).

Supporting this approach, Robertson, Casali and Jacobson stress the importance of distributed learning and argue that a focus on absorbing knowledge during the innovation process is insufficient. They stress that this step must be followed by adopting and integrating the knowledge. Each step requires different capabilities. Accessing and absorbing the right knowledge from internal and external sources is the basic capability. The subsequent step, adopting knowledge, includes change processes within the company, because people may refuse knowledge for a variety of reasons. Finally, the new knowledge must be integrated into the existent product or service development infrastructure, which leads to new challenges such as coordinating formal and informal relationships inside and outside the company (Robertson, Casali, & Jacobson, 2012, p. 826).

Going even deeper into this issue, Lichtenthaler and Lichtenthaler distinguish six different knowledge capacities along the three dimensions of knowledge exploration, knowledge retention and knowledge exploitation, labelled “dynamic knowledge capabilities” (Lichtenthaler & Lichtenthaler, 2009, p. 1323):

- **Inventive capacity** is the firm’s ability to internally explore new knowledge (internal exploration).
- **Absorptive capacity** is the firm’s ability to explore external knowledge (external exploration).
- **Transformative capacity** is the firm’s ability to retain knowledge inside the organisation (internal retention).
- **Connective capacity** is the firm’s ability to retain knowledge outside the organisation (external retention).
- **Innovative capacity** is the firm's ability to internally exploit knowledge (internal exploitation).

- **Desorptive capacity** is the firm's ability to externally exploit knowledge (external exploitation).

The most important precondition for unlocking these capabilities is professional communication. Zerfaß shows that inter-organisational communication flows between different departments, for example R&D and marketing, cannot be taken for granted and must be supported by adequate communication strategies. He suggests four explicit communication roles for the OI process: the communication enabler, the idea generator, the expert publisher and the devil's advocate.

The communication enabler catalyses the communication process between internal and external stakeholders by establishing topic-specific communication forums. The idea generator, who primarily acts within the process, reports on the knowledge of external and internal stakeholders to induce new impulses. The expert publisher acts externally and launches campaigns to reach new stakeholders and prepare them for the innovation output. Finally, the devil's advocate should carefully dismantle traditional patterns of thinking and behaviour to minimise the resistance to change within a company (Zerfaß & Ernst, 2009, p. 24).

With reference to quantitative research, including 41 German companies in the future technology sector, Zerfaß and Ernst advocate for the systematic alignment of innovation and communication processes. They recommend that both processes should fit into overall corporate strategy and vision. In this context, “communication” is not limited to the creative publishing of complex messages, but entails strategic functions in every process stage, employing a mixture of all modern communication methods (Zerfaß & Ernst, 2009, p. 78).
Mast demonstrates that the culture of innovation is strongly determined by actors’ shared understanding of communication. She argues for the best possible integration of all actors into the communication process and suggests in-depth, feedback-oriented dialogue between partners instead of unidirectional information transfer from managers to employees. As part of their leadership responsibility, managers should set visions and goals and make them reality for their staff. They establish the groundwork for effective cultural change and act as promoters and catalysts of innovations. Dialogue-based communication creates trust and attention in the modern working environment, which is hampered by a multidimensional flood of information (Mast, 2009, p. 287).

In summary, inbound and outbound OI require different capabilities to absorb, integrate and implement knowledge. To catalyse this kind of knowledge flow, boundary-spanning competences are needed which support the transfer of solutions across similar industries. Both kinds of capabilities require a systematic alignment of communication with the different dimensions of the innovation process.

2.2.3 The role of social media technology in OI
Social media software plays a vital role within innovation communication, as it combines communication and knowledge features. Social software services can be divided into three different classes: identity and network management, information management and communication management.

Identity and network management services allow users to create a personal profile and expand their personal network. Users can also use search mechanisms based on tagging, which allows content to be categorised.

Weblog and instant messaging services play the most dominant role in communication and interaction services, as will be described later.
Information management services allow users to edit joint content and create a shared knowledge base.

Von Krogh reports that social media software has great potential to grow knowledge and changes knowledge management from being centralised to decentralised and community driven. In this context, Ferndando highlights that knowledge creation is an evolving process, which is not manageable at every stage. He recommends observing the community and applying a knowledge maturity model with different levels of maturity. (Fernando, 2010, p. 509; von Krogh, 2012, p. 158)

In addition to the knowledge angle, social media technology plays a key role in distributed innovation setups as it provides many useful features.

Awazu, Baloh, Desouza, Wecht, Kim and Jha show that different social media features support different stages of distributed innovation. A social media platform’s networking facility is its most important feature. Connecting people with the appropriate skills and interests lays the foundation for all other functions (Awazu et al., 2009, p. 53).

Social media technology can be used to identify the right people for an innovation community based on their previous behaviour on such platforms. These behavioural footprints can be extracted based on a social network ontology model. This strategy foresees the declaration of content with its meaning (semantic web) so that it can be interpreted via computer systems, so-called “social media extensions”. This allows publication data about potential internal and external participants to be gathered and classified in terms of “know-how”, “know-what” and “know-who” (Carbone, Contreras, Hernández, & Gomez-Perez, 2012, p. 8939; Wi, Oh, & Jung, 2011, p. 8475; Martínez-Torres, 2013, p. 2509).
With reference to many well-known use cases, Kho, along with McNamee and Naslund, state that technologies such as blogs, wikis, podcasting and RSS feeds are playing an increasing role in uncovering new information and ideas in the co-creation process between companies and customers. A blog (abbreviation for web log) is a kind of website used as a public diary. Blogs are used to discuss ideas openly. Wikis allow users to create and publish interlinked webpages to generate public knowledge (such as Wikipedia). This technique is useful at every stage of the innovation process, including commercialisation. Podcasting is the production and distribution of media content for user subscription, and can be used to explain and illustrate complex issues. RSS feeds notify subscribers of changes to an existing website. RSS feeds can be used to inform participants in an innovation community about the latest developments. Instant messaging is used for real-time e-mail communication.

In later innovation stages, such as prototyping or innovation implementation, features like file sharing or project management functions are needed. Even in the commercialisation phase, which marks the end of the innovation funnel, technologies such as wikis are an appropriate to establish a many-to-many knowledge base where employees and customers can share information (Kho, 2008; McNamee, 2011; Naslund, 2010).

In addition, Naslund argues that social media technologies can also be used to reduce cultural barriers within a company. She uses the example of the company Best Buy, which used social networks to successfully refine its corporate culture. Opening up lines of communication, encouraging employees to post ideas to improve the company and facilitating easier collaboration in projects helped minimise cultural obstacles. In addition, social media software should ideally allow a partial and controlled opening of the process,
providing different features for different closed and open user groups (Koch, M., Bullinger, A., & Möslein, K., 2009, p. 168).

Table 4: Social software services used by different user groups

<table>
<thead>
<tr>
<th>Information management services</th>
<th>Core Innovator</th>
<th>Peripheral Innovator</th>
<th>External Innovator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication and interaction services</td>
<td>Closed weblog, instant messaging</td>
<td>Closed weblog, instant messaging</td>
<td>Open weblog</td>
</tr>
<tr>
<td>Identity and networking services</td>
<td>Closed social tagging service, closed social networking services</td>
<td>closed-social networking services</td>
<td>Open social networking services</td>
</tr>
</tbody>
</table>

Table 5 summarises the use cases for social media technologies in different OI process stages, as discussed above. An “X” means the literature review process has revealed that feature (rows) to be valuable in a particular process stage.

Table 5: Use of social media features in particular process stages

<table>
<thead>
<tr>
<th>Information management</th>
<th>Stage Ideation</th>
<th>Stage Exploration</th>
<th>Stage Evaluation</th>
<th>Stage Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creating and publishing bookmarks</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Sharing files with others</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Administrating project activities</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Setting up wikis for knowledge sharing</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Extensions for automated pattern matching and categorisation (knowledge management)</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Creating and publishing podcasts (for knowledge support such as tutorials)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Identity and Networking

Creating and X X
2.2.4 Recommendations for managing sponsored innovation communities

The following subsection builds on the issues discussed above by developing management principles based on organisational, cultural and technological factors.

For later references, the combination of all these factors is called “management of sponsored innovation communities”. The goal of this kind of compilation is to provide reference points for later research.

Table 6: Management principles in sponsored OI communities

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Management principles of sponsored communities</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture</td>
<td>Support openness and diversity</td>
<td>(Bruns A., 2010)</td>
</tr>
<tr>
<td></td>
<td>Define common rules of the game and behavioural rules.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Foster self-moderation and self-organisation</td>
<td>(Naslund, 2010)</td>
</tr>
<tr>
<td></td>
<td>Engage community leaders / lead users as partners with special roles and competences</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strongly avoid community exploitation by sharing innovation output (e.g., Creative Commons licenses)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Establish a culture of suppliers and healthy</td>
<td></td>
</tr>
</tbody>
</table>
Create a culture of collective problem solving  
Align communication and innovation processes  
Install dynamic knowledge capabilities  
Define ownership of the community within the company  
Nominate a cross-functional team to support the community  
Develop a strategy which considers what success and failure of the community looks like and develop measures to deal with undesirable movements  
Establish coordination and moderation  
Provide training within technically ambitious innovation environments  
Support the community with the best available information and resources  
Provide tasks for self-selection instead of assigning tasks in a classical management manner  
Enable democratic decisions  
Plan granularity and modularity of tasks, so they can be tackled by many participants  
Design the architecture of participation to enable diversified participation  
Plan the content and the use of technology  
Establish social media services:  
Information management services  
+ communication and interaction services  
+ identity-and networking services

(Mast, 2009)  
(Zerfaß & Ernst; 2009)  
(Lichtenthaler & Lichtenthaler, 2009)  
(Naslund, 2010)  
(Tickle, Adebanjo, &Michaelides, 2011)  
(Naslund, 2010)  
(Lakhani & Panetta, 2007)  
(Bruns A., 2010)  
(West & O’mahony, 2008)  
(West & Lakhani, 2008)  
(Dahlander et al., 2008)  
(Keinz et al., 2012)  
(Fernando, 2010; von Krogh, 2012; Awazu et al., 2009; Carbone, Contreras, Hernández, & Gomez-Perez, 2012; Wi, Oh, & Jung, 2011; Martinez-Torres, 2013; Kho, 2008; McNamee, R., 2011; Naslund, 2010; Koch, M. et al., 2009)
2.3 Theoretical underpinnings of motivation and demotivation

Actors in OI communities are human beings driven by their motivation within a certain innovation environment, which is determined by cultural values. In reference to RQ1 and RQ2, this section deals with the concepts of motivation and demotivation, along with general motivators and barriers to OI, by reporting on the status of research in this field.

2.3.1 Theories integrating motivators and barriers

According to Gmür and Thommen, motivation:

…is an emotional experience which results in actions or the desire to reach a goal. It accrues due to an actual need in combination with the possibility to satisfy it. Thus it is a general feeling of deficiency which might lead to a motive, a latently existing and goal-oriented willingness to act. The experience of loneliness for example is an occurrence of a need whereas the search for affiliation is seen as the corresponding motive. Once a motive hits a sufficient object this is called an incentive.

The authors differentiate between self-motivation, where “a person delivers their own incentives for action and performance”, and external motivation, where “a person is successfully motivated by an incentive or an action of another person”.

As a very simple motivational model, the authors present the following interplay (Gmür & Thommen, 2011, p. 88):

**Phase 1:** There is a need or a feeling of deficiency.

**Phase 2:** There is a latent willingness to act to satisfy this need.

**Phase 3:** The strong tension between the feeling of deficiency and the willingness to overcome this feeling induces a certain action which is directed towards an offered incentive.
Phase 4: The result of the action is supposed to satisfy the need. Depending on the degree of success, this leads to further efforts or to frustration, which results in the disappearance of the motive.

Innovation managers must know what needs and motives exist to determine appropriate incentive structures.

In his hierarchy of needs, Maslow provides a hierarchical structure for all human needs: physiological needs, safety needs, love needs, esteem needs and self-actualisation needs. He states that the first four categories are deficit experiences and are subject to indirect motivation to avoid dissatisfaction. Only the fifth, self-actualisation, is subject to real and free motivation. This model assumes that all underlying needs must be fulfilled before an overlying need is subject to motivation. Thus an autonomous human being is only ready for personal growth within self-actualisation when all underlying needs are satisfied.

Table 7: Maslow’s hierarchy of needs

<table>
<thead>
<tr>
<th>Category of needs</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiological needs (Bottom of hierarchy)</td>
<td>food, drinking, relaxation, sexual satisfaction</td>
</tr>
<tr>
<td>Safety needs</td>
<td>Protection from external dangers (safety), knowledge about future development and their consequences (certainty) and firmness in goals and beliefs (security)</td>
</tr>
<tr>
<td>Love needs</td>
<td>Ambition for affection, understanding and appreciation</td>
</tr>
<tr>
<td>Esteem needs</td>
<td>Privileges, commendation, status symbols, estimation</td>
</tr>
<tr>
<td>Self-actualisation (top of hierarchy)</td>
<td>Dominant subject to motivation of an autonomous and self-conscious human being, who was able to satisfy all other needs, striving for personal development and growth, freedom and leeway in working conditions and the adoption of responsibility, influencing and moral and aesthetic values</td>
</tr>
</tbody>
</table>

Maslow's hierarchy of needs allows a distinct handling of different needs. Unfortunately, the hierarchical relation between these needs has never been empirically proven. This leads to the cautious assertion that a motivational strategy should address all needs and

Theories of motivation can be divided into content theories and process theories. Content theories, such as Maslow’s hierarchy of needs, explain what leads to performance, whereas process theories explain how the process of motivation works. Herzberg’s two factors theory is a typical example of a content theory, as the two categories of factors describe what leads to motivation and what might be perceived as demotivating.

Herzberg identifies two different groups of factors, intrinsic motivational factors and hygiene factors. Intrinsic motivational factors are drivers for a high degree of job satisfaction and are closely linked with a person’s values and preferences.

Hygiene factors, on the other hand, are reasons for dissatisfaction. They cover corporate culture, relationships between peers, staff and management, working conditions, salary, status and security. Herzberg calls them hygiene factors because, like hygiene measures, they might have a preventive effect but are not the real key to success. Hygiene factors are undetectable at higher levels, but once they do not meet employees’ expectations they lead to dissatisfaction. Hygiene factors be classified into various categories: work content (e.g., tools, support, timeframe and leeway), working conditions (e.g., noise, smell, optical disturbance, tidiness of the workplace and environment), relationship with the company (e.g., reliability of wages, fairness and justice, company reputation company, employee participation) and relationships between supervisors, colleagues and staff (Herzberg, 2003, p. 90)

Despite admitting the potential negative influence of hygiene factors Herzberg’s theory focuses on motivational factors, which can be increased by incentives to a limited extent. In contrast, the theory by
Küpers and Wunderer focuses on avoiding and reducing demotivation by eliminating motivational barriers. This approach assumes that a well-trained professional staff, like in the banking sector, is already intrinsically motivated. Thanks to industry conditions, these kinds of knowledge workers are well paid and have access to instruments for discussing and determining their annual goals and performance agreements. Here there is limited scope for additional extrinsic motivational incentives, because they already form part of standard working conditions.

Küpers and Wunderer claim that concentrating on avoiding demotivation is more promising here than trying to improve already optimised conditions. Motivational barriers cut the energy of highly motivated professionals and reduce the evolution of creativity and thus job satisfaction, productivity and value creation.

According to Küpers and Wunderer, demotivation is a “constraint, blockage or loss of motivational energy or of performance due to motivational barriers”. It is not simply the opposite of motivation; as well as reducing performance it also leads to undesired behaviour (Wunderer & Küpers, 2003, p. 10).

Remotivation tries to regain lost motivational energy and potential. This might happen by reducing existing motivational barriers or substituting other motivational factors. Remotivation can be externally controlled, for example by colleagues and supervisors, or can be reached by the employee himself in the form of self-remotivation. Demotivation lies on a dynamic continuum between “not demotivated” and “strongly demotivated”. Küpers and Wunderer offer a three-dimensional structure to order the different underlying motivational barriers.

The first dimension is working context, which focuses on the content of work, the coordination of work, the execution of work, resources
for work, direct appreciation for work, responsibility for work, identification with work and job opportunities.

The second dimension is the relationship context, which is described as the relationship with colleagues, direct supervisors, higher management and other departments.

The third dimension is cultural context, which involves organisational culture, enterprise policy and all of a company's norms and values.

These concepts of intrinsic and extrinsic motivation (Herzberg) and avoiding demotivation (Wunderer and Küpers) were selected as scientific guideposts for this research as they promise to most strictly address RQ1 and RQ2. Thus they form the motivational part of the research framework, which will be presented later in this chapter.

2.3.2 Motivational factors

According to von Hippel, some people contribute disproportionally to the innovation process due to their very high motivation. These participants, so-called “lead users”, want to influence the development of new products and services based on various different motives, such as individualising product offerings (Hippel, 2005, p. 5). The Apache open source project has shown that a handful of lead users can contribute a very high portion of value to a project (Lakhani & von Hippel, 2003; Franke & Hippel, 2003).

According to Gmür and Thommen, a distinction can be drawn between intrinsic and extrinsic motives. Intrinsic motivation is based in the fulfilment of a task itself. It relies on values and is different from person to person. In contrast, extrinsic motivation is not driven by a task but by the effect of its completion, particularly a reward (Gmür & Thommen, 2011, p. 93).

The different motives within OI are consolidated in tables 10-12. Before listing these motivational factors, the typical underlying methods will be highlighted. Usually based on qualitative research
methods, researchers have observed and interviewed community members on the three main OI platforms: co-creation platforms, intermediary platforms and internal innovation communities.

Motzek identified motivational factors for open source programmers with reference to different studies. He conducted an exploratory study to qualitatively examine user innovators of Spreadshirt.com and Threadless.com, both co-creation platforms, to evaluate whether these motivation factors also affect user innovators. Both business models allow users to design T-shirts or other merchandise. The motivations of these user innovators were divided into intrinsic, extrinsic, and social motives. Social motives are special cases of extrinsic motives relating to other members’ reactions to a person’s behaviour within a community. Brabham later confirmed a subset of these motivational factors by interviewing 17 users of Threadless via instant messenger (Motzek, 2006; Brabham, 2010).

A similar research strategy based on case study research with a mixed methods approach was adopted by Jeppesen and Frederikson, who researched the motives of user innovators within the Propellerhead community in the field of computer-controlled music instruments (Jeppesen & Frederiksen, 2006).

Battistella and Nonino conducted very broad research into 26 OI co-creation and intermediate platforms based on mixed methods using qualitative empirical research in combination with factor analysis and multiple scaling (Battistella & Nonino, 2013).

The 2010 study by Antikainen, Mäkipää and Ahonen investigated three different OI intermediaries in three different countries: France, Finland and the Netherlands. These intermediaries, described as maintainers, provide and maintain innovation platforms where companies can post innovation challenges to be solved by registered experts in exchange for rewards. The data for the case studies were
gathered via questionnaires, internet-based document reviews and in-depth interviews (Antikainen, Mäkipää, & Ahonen, 2010).

Muhdi and Boutellier investigated the impact of motivational factors on members’ participation and contribution. They used case studies to investigate two different innovation communities, the intermediary community of Swiss Online Services and the internal innovation community of a Swiss bank (Muhdi & Boutellier, 2011).

The following tables summarise and explain the motivational factors identified by these researchers, classified by whether they are intrinsic, extrinsic or social and the kind of platform they were observed on (1: user co-creation; 2: intermediate; 3: internal innovation community).

**Table 8: Intrinsic motivational factors researched for OI platforms**

<table>
<thead>
<tr>
<th>Intrinsic motivational factor</th>
<th>Explanation</th>
<th>Platform type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enjoyment</td>
<td>User innovators report having fun creating new products which feature their own handwriting</td>
<td>1</td>
<td>M01</td>
</tr>
<tr>
<td>Freedom and control</td>
<td>Users prefer the freedom of defining the direction of their work for themselves</td>
<td>1</td>
<td>M02</td>
</tr>
<tr>
<td>Intellectual stimulation and the learning experience</td>
<td>Users like the feeling of having solved a problem and the attendant increase of knowledge</td>
<td>1</td>
<td>M03</td>
</tr>
<tr>
<td>Expression of creativity</td>
<td>Users enjoy the ability of expressing themselves via artistic capabilities, which often go unused</td>
<td>1</td>
<td>M04</td>
</tr>
<tr>
<td>Entrepreneurial mindset</td>
<td>Some users are typical &quot;men of action&quot; due to a propensity towards entrepreneurship</td>
<td>1</td>
<td>M05</td>
</tr>
<tr>
<td>Potential later use of products; free use of products and services</td>
<td>Driven by their dissatisfaction with the current product, users provide information about their future product needs</td>
<td>1,2</td>
<td>M06</td>
</tr>
</tbody>
</table>
### Table 9: Extrinsic motivational factors researched for OI platforms

<table>
<thead>
<tr>
<th>Extrinsic motivational factor</th>
<th>Explanation</th>
<th>Platform type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monetary compensation</td>
<td>Participants earn money for participating in the OI process</td>
<td>1,2,3</td>
<td>M07</td>
</tr>
<tr>
<td>Competition</td>
<td>Participants have the chance to win a game</td>
<td>1,2,3</td>
<td>M08</td>
</tr>
<tr>
<td>New job opportunities and firm recognition</td>
<td>Participation might lead to a job within the company (particularly in the software industry)</td>
<td>1</td>
<td>M09</td>
</tr>
<tr>
<td>Clear objectives combined with clarity of purpose and concept</td>
<td>Collaboration on an innovation platform is time consuming; clear goals can help provide certainty about time commitments</td>
<td>2</td>
<td>M10</td>
</tr>
<tr>
<td>Active participation of maintainers</td>
<td>Collaboration on an innovation platform is time-consuming; catalysing support is very helpful</td>
<td>1,2,3</td>
<td>M11</td>
</tr>
<tr>
<td>Good usability of system and platform features</td>
<td>The usability of the system can be viewed as a flow experience</td>
<td>1,2,3</td>
<td>M12</td>
</tr>
<tr>
<td>Sense of efficacy</td>
<td>Expert community collaboration can be very efficient, provides a feeling of flow</td>
<td>2</td>
<td>M13</td>
</tr>
</tbody>
</table>

### Table 10: Social extrinsic motivational factors researched for OI platforms

<table>
<thead>
<tr>
<th>Social extrinsic motivational factor</th>
<th>Explanation</th>
<th>Platform type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affiliation to a certain community</td>
<td>Users gain a sense of belonging to a specific group of people and mutual appreciation</td>
<td>1,3</td>
<td>M14</td>
</tr>
<tr>
<td>Reputation</td>
<td>Users’ expertise is recognised by other members of the community</td>
<td>1</td>
<td>M15</td>
</tr>
<tr>
<td>Feedback</td>
<td>The immediate response of the community helps to improve product designs and ideas</td>
<td>1</td>
<td>M16</td>
</tr>
<tr>
<td>Open and constructive atmosphere</td>
<td>A supportive and constructive atmosphere enables easier collaboration</td>
<td>2</td>
<td>M17</td>
</tr>
<tr>
<td>Exposure to new viewpoints and synergy</td>
<td>Participants with different background create new perspectives and synergy</td>
<td>2</td>
<td>M18</td>
</tr>
<tr>
<td>Sense of cooperation and reciprocity</td>
<td>Users get a feeling of being in the same boat and influencing other people’s opinions, long-term positive relationships, social capital</td>
<td>2</td>
<td>M20</td>
</tr>
<tr>
<td>Individual commitment and accountability</td>
<td>Users feel committed because they know others trust them based on earlier valuable contributions</td>
<td>1,2</td>
<td>M21</td>
</tr>
</tbody>
</table>
2.3.3 Barriers to OI and motivation

Motivational barriers can prove crucial. The following section outlines specific barriers researched in the OI context.

Fasnacht argues that people and corporate culture are the most important drivers of innovation. Eliminating barriers and transforming corporate culture towards a climate of openness, reduced hierarchy, empowerment and transparency are a core leadership challenge for financial services (Fasnacht, 2009, p. 184).

According to Slowinski and Sagal, the process of opening up is challenging, because many new internal participants such as marketing or finance must cooperate with different internal and external partners despite not being used to working in an OI environment. They must therefore overcome various barriers (Sagal & Slowinski, 2010).

This is strongly supported by Love, Roper and Bryson, who use quantitative research based on over a thousand UK companies to demonstrate that internal cross-functional teamwork is a vital part of effective innovation, particularly in the early process stages. New management instruments are needed to support organisations and facilitate new forms of cooperation to overcome typical barriers to innovation (Love, Roper, & Bryson, 2011, p. 1449).

Hernandez-Mogollon, Cepeda-Carrion, Cegarra-Navarro and Leal-Millan prove that cultural barriers affect innovation within companies. They use empirical research to show a clear link between innovation and specific cultural barriers. The authors conclude that minimising cultural barriers will increase a company’s level of innovation. To overcome these barriers, they suggest sustainably evolving a company's corporate culture towards a climate of open-mindedness (Hernández-Mogollon, Cepeda-Carrión, Cegarra-Navarro, & Leal-Millán, 2010).
In their article, “Overcoming barriers to Open Innovation at Apple, Nintendo and Nokia”, Pontiskoski and Asakawa identify three different categories of barriers companies must overcome to open up their innovation processes. The authors use a case study based on secondary data to identify how three companies overcame these barriers.

The first and most important barriers are cognitive barriers. Managers may not understand how important innovation is to maintain their company’s competitive advantage and cling to old processes and approaches.

The second kind of barrier is behavioural. Behavioural barriers exist when managers know about the significance of innovation but do not adequately respond to this knowledge. As a consequence, employee resistance to change goes unmanaged and the organisation succumbs to inertia, avoiding new ideas and concepts (van de Vrande, de Jong, Vanhaverbeke, & de Rochemont, 2009).

Companies can overcome behavioural and cognitive barriers but still fail due to institutional barriers. The authors assert that the level of institutional barriers is inversely correlated with the degree to which routines and processes support the company’s absorptive capacity (Pontiskoski & Asakawa, 2010; Salmi, Salmi, & Torkkeli, 2010).

With reference to knowledge exchange processes in online communities, Ardichvili lists four other kinds of barriers: interpersonal barriers, procedural barriers, technological barriers and cultural barriers.

Interpersonal barriers are barriers to cooperation between actors, for example due to fear of criticism or fear of misleading others.

Procedural barriers relate to a lack of expertise for certain actions within processes, for example uncertainty about how best to share knowledge.
Technological barriers relate to problems handling technology, particularly within communication processes.

Finally, cultural barriers involve phenomena such as face-saving, modesty or power distance (Ardichvili, 2008, p. 550).

The following table combines these different innovation barriers (researched predominantly using qualitative methods). They are ordered according to the motivational categories suggested by Wunderer and Küpers (Wunderer & Küpers, 2003, p. 9).

Table 11: Motivational barriers related to work factors

<table>
<thead>
<tr>
<th>Motivational barrier</th>
<th>Explanation</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of competent personal and expert knowledge</td>
<td>Insufficient average/overall competence within a company</td>
<td>B01</td>
</tr>
<tr>
<td>Lack of management knowledge</td>
<td>Insufficient legal and administrative competence (e.g., administrative and legal knowledge) within a company</td>
<td>B02</td>
</tr>
<tr>
<td>Lack of management support within innovation management</td>
<td>Insufficient management support within the innovation process or counter-productive management behaviour</td>
<td>B03</td>
</tr>
<tr>
<td>Weak usability of IT platform</td>
<td>Inadequate supporting technology for the innovation process or insufficient usability of systems and tools</td>
<td>B04</td>
</tr>
<tr>
<td>Lack of tools and processes</td>
<td>Inadequate tools and processes within the innovation process</td>
<td>B05</td>
</tr>
<tr>
<td>Lack of time, time pressure</td>
<td>Prioritisation of daily business, time restrictions due to other more important tasks</td>
<td>B06</td>
</tr>
<tr>
<td>Lack of financial resources</td>
<td>Obtaining financial resources is problematic</td>
<td>B07</td>
</tr>
<tr>
<td>Difficulties in aligning partners/participants</td>
<td>Insufficient ability and willingness of aligning people</td>
<td>B08</td>
</tr>
<tr>
<td>Communication problems</td>
<td>Insufficient ability and the willingness to communicate</td>
<td>B11</td>
</tr>
<tr>
<td>Unclear, unrealistic goals</td>
<td>Resource wastage due to over-specific innovation. Inability to judge customer demand (expert trap)</td>
<td>B12</td>
</tr>
<tr>
<td>Lack of rewards and monetary compensation</td>
<td>Inadequate compensation for successful ideas negatively affects motivation</td>
<td>B16</td>
</tr>
<tr>
<td>Lack of job opportunities</td>
<td>Inadequate career opportunities/progression from successful ideas negatively affects motivation</td>
<td>B17</td>
</tr>
<tr>
<td>Information overflow</td>
<td>An overabundance of information leads to stress and time wasted sifting between relevant and irrelevant data</td>
<td>B28</td>
</tr>
</tbody>
</table>
### Table 12: Motivational barriers related to cultural factors

<table>
<thead>
<tr>
<th>Motivational barrier</th>
<th>Explanation</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulties integrating partners/participants</td>
<td>Insufficient ability and willingness to integrate people</td>
<td>B09</td>
</tr>
<tr>
<td>Lack of commitment</td>
<td>Participants do not behave supportively, participants do not meet expectations</td>
<td>B10</td>
</tr>
<tr>
<td>Early opposition</td>
<td>Early opposition as a result of information access</td>
<td>B13</td>
</tr>
<tr>
<td>Lack of appreciation</td>
<td>Lack of appreciation for participants by management</td>
<td>B14</td>
</tr>
<tr>
<td>High resistance to change</td>
<td>Fear of adopting new ideas, tendency to protect traditional approaches</td>
<td>B18</td>
</tr>
<tr>
<td>Lack of flexibility of participants</td>
<td>Insufficient flexibility to adopt new patterns of behaviour, due to a fear of losing knowledge and innovation ability</td>
<td>B19</td>
</tr>
<tr>
<td>Bureaucracy and administrative burdens</td>
<td>Excessive bureaucracy and administrative burdens</td>
<td>B25</td>
</tr>
<tr>
<td>Costs and risk of innovation</td>
<td>Insufficient willingness on the part of a company to invest in innovation and bear risks</td>
<td>B26</td>
</tr>
<tr>
<td>Lack of the capability to cooperate with others and to share knowledge and IP</td>
<td>Insufficient willingness to cooperate and share IP, leading to defensive IP strategies</td>
<td>B27</td>
</tr>
<tr>
<td>Resistance to technology</td>
<td>Insufficient adoption of new technological innovations</td>
<td>B30</td>
</tr>
</tbody>
</table>

### Table 13: Motivational barriers related to relationship factors

<table>
<thead>
<tr>
<th>Motivational barrier</th>
<th>Explanation</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncertainty about what knowledge can be published</td>
<td>Fear of publishing knowledge which might be subject to protection</td>
<td>B15</td>
</tr>
<tr>
<td>Fear of misleading others</td>
<td>Fear of disrupting the innovation process, unwillingness to shoulder responsibility</td>
<td>B20</td>
</tr>
<tr>
<td>Lack of trust and confidentiality</td>
<td>Insufficient trust between actors</td>
<td>B21</td>
</tr>
<tr>
<td>Face-saving</td>
<td>Fear of losing face</td>
<td>B22</td>
</tr>
<tr>
<td>Fear of criticism</td>
<td>Fear that feedback may contain critical elements</td>
<td>B23</td>
</tr>
<tr>
<td>Lack of cultural and behavioural rules</td>
<td>Insufficient cultural and behavioural rules top meet community expectations</td>
<td>B24</td>
</tr>
<tr>
<td>Lack of self-confidence</td>
<td>Insufficient self-confidence leads to doubts about participation</td>
<td>B29</td>
</tr>
<tr>
<td>Modesty</td>
<td>Insufficient self-confidence to publish ideas</td>
<td>B31</td>
</tr>
<tr>
<td>Power distance</td>
<td>Effects from actors located higher up the hierarchy</td>
<td>B32</td>
</tr>
<tr>
<td>In-team orientation and lack of inter-organisational corporation skills</td>
<td>Lack of willingness or ability to act across team boundaries (&quot;not-invented here syndrome&quot;)</td>
<td>B33</td>
</tr>
<tr>
<td>Lack of support from work council</td>
<td>Counter-productive work council behaviour reduces participants’ motivation</td>
<td>B34</td>
</tr>
</tbody>
</table>
Many strategies have been proposed to overcome certain barriers. However, the sheer number of barriers listed above suggests a better approach might be integrated observation combined with motivational factors instead of specific strategies, especially as different cultures and innovation approaches affect the number and strength of these barriers. There is currently no data on the specific occurrence of these barriers in internal OI communities within the financial service industry. Researching specific occurrences of these decelerators in this particular cultural environment will hopefully contribute to the development of an integrated management strategy to overcome them.

2.3.4 Criticism of approaches to motivation and demotivation

Current practice primarily focuses on monetary incentives to generate input from individual participants. This does not consider all the drivers of motivation or support cooperation between participants. Thus much creative potential remains untapped.

A practical example of a different approach is the "Haller idea shop", which is targeted at every employee at Bausparkasse Schwäbisch Hall AG. The goal of the Haller idea shop is the continuous improvement and development of products, work processes and the work environment by harnessing the creativity of all employees on a shared web platform. A central coordinator ensures that the ideas are forwarded.

The counterproductive impact of extrinsic motivational factors is suggested by the maxim “All motivation is demotivation”. This is the central message of Reinhard K. Sprengers' book about the myths of motivation. He asserts that external motivation tries to get an employee to do what he never would do through intrinsic motivation. According to Sprenger, these extrinsic factors only have a temporary effect and inevitably result in an insatiable desire for even better incentives from future iterations (Sprenger, 2010, p. 262). If extrinsic
motivational factors only play a subordinate role, then avoiding demotivation once again becomes a vital part of innovation strategy.

Another driver of criticism is the weak anchoring of the underlying research designs in different theories of motivation. Every paper uses different theories of motivation to explain the phenomenon of motivation, but none of them incorporates their theory within a conceptual framework of one or more theories or concepts of motivation. But as motivation has been thoroughly researched in the past, it seems useful to strictly transfer theoretical aspects of motivation into the field of OI.

Thus, unlike current academic literature, which focuses on a narrow examination of motivational factors, the problem of demotivation and remotivation must be integrated into research to generate a holistic view of motivation and demotivation in OI.

Until now, internal innovation platforms have seen little research. Only Muhdi and Boutellier address the internal innovation community scientifically. Other authors look for common motivational factors across different innovation platforms, ignoring the wider community context. But it is obvious that this context, such as corporate culture, company organisation, technology choices and corporate strategy, will influence innovation activity within an internal innovation community. Following this argument, a holistic consideration of the internal community context is essential.

The following figure illustrates these four critiques of the field of motivation in OI.
2.4 Research framework

The literature review can be condensed into the following conclusions and research propositions. These will guide this research and might even lead to further research questions beyond RQ1 and RQ2. Conclusions are abbreviated as “CC” and research propositions as “RP”.

CC1: Internal OI crowdsourcing is an appropriate starting point for OI in traditional industries.

OI is a continuum between open and closed innovation. The degree to which the process is open to different groups of cooperators depends on the strategy of the process owner. Internal OI crowdsourcing provides the opportunity for successive opening and is an appropriate and up-to-date starting point for traditional industries to embark upon OI. These consolidated findings argue for
establishing OI communities within traditional industries such as banking.

CC2: OI can be transferred to financial services by using web X.0 technologies and specifically considering the human factor.

OI can be transferred to larger firms in the service industry, which are still at early stages of adoption. Closely integrating customers into service innovation is even more important than for product innovation and is more complex, due to the intangible and often product-related nature of services. To overcome this challenge, new communication technologies and user toolkits are needed. The deeper and more technically ambitious integration of participants requires particular consideration of the “human factor”. Thus motivational factors and barriers within OI process are of particular interest, as is reflected by RQ1 (motivation) and RQ2 (demotivation).

CC3: Social media technology is the key technology for innovation communities.

Every type of social media software (information management, communication management and identity and networking services) can contribute to every stage of the innovation management process (idea generation, innovation development, innovation evaluation and innovation implementation). Social media software plays a vital role in innovation communication as it combines communication and knowledge features.

CC4: OI can only prosper when dynamic knowledge capabilities exist and are stimulated by helpful innovation communication.
Inbound and outbound OI require different knowledge capabilities, to absorb, integrate and implement knowledge. Catalysing this kind of knowledge flow requires boundary-spanning competences which support the transfer of solutions across similar industries. Both kinds of capabilities require a systematic alignment of communication with different stages of the innovation process.

CC5: Integrated consideration of motivation and demotivation is important for strong OI performance.

Contrary to the current academic literature, which focuses on a narrow examination of motivational factors, the problem of demotivation must be integrated to reach a holistic view of motivation in OI. Demotivation is a counterproductive influence on motivation which is anchored within the innovation environment and influenced by external, often cultural conditions, which can appear as barriers to performance. To harness intrinsic motives, which are essential for strong innovation performance, motivational barriers must be reduced or eliminated. This can be achieved by thinking about RQ1 and RQ2 together, considering both motivational and demotivational factors simultaneously.

CC6: The contextual environment of internal OI communities affects process success.

In addition to an entirely new understanding of the classical management disciplines of planning and organisation, the creation and the careful support of an OI culture is necessary to stimulate a community process. According to Wunderer and Küpers, cultural, work and relationship factors directly influence demotivation. Barriers related to these factor play a significant role and must be prioritised.
CC7: Intrinsic, extrinsic and social motives coexist within internal innovation communities.

There are many suggested strategies for harnessing certain motivational factors. Current OI literature suggests focusing on intrinsic motivational factors, as they are supposed to be the strongest and the most useful. But according to the most prominent motivation theories, hygiene factors, which are closely linked to external factors, can become barriers if they are underestimated and ignored. This plurality of motives suggests an integrated approach rather than unthinking adoption of narrow strategies, particularly as different cultural values and innovation setups affect the existence and level of different motivational factors. There is currently no data on the specific occurrence of motivational factors in OI communities within the financial service industry. Researching specific occurrences of these accelerators in this cultural environment should contribute to the development of an integrated management strategy to leverage them.

CC8: Motivational barriers hamper OI and are anchored in particular innovation environments.

There are many suggested strategies for overcoming particular barriers. But the strong links between barriers and demotivation suggests a combined observation of motivational factors and cultural barriers, particularly as different cultures and innovation setups affect the existence and strength of barriers. There is currently no data on the specific occurrence of these barriers in OI communities within the financial service industry. Researching specific occurrences of these decelerators in this cultural environment should contribute to the development of an integrated management strategy to overcome them.
From these eight conclusions, the following research propositions (abbreviated RP) can be derived:

**Table 14: Derivation table of conceptual influences on research propositions**

<table>
<thead>
<tr>
<th>Influence of concepts on RP1</th>
<th>Influence of concepts on RP2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC1 OI concept as such is relevant</td>
<td></td>
</tr>
<tr>
<td>CC2 Financial services can benefit from OI</td>
<td></td>
</tr>
<tr>
<td>CC3 Social media is key technology for OI-communities</td>
<td></td>
</tr>
<tr>
<td>CC4 OI prosper when dynamic knowledge capabilities are existent and with appropriate OI communication</td>
<td></td>
</tr>
<tr>
<td>CC5 An integrated consideration of motivation and demotivation is necessary</td>
<td></td>
</tr>
<tr>
<td>CC6 The contextual environment of internal OI communities affects process success</td>
<td></td>
</tr>
<tr>
<td>CC7 Intrinsic, extrinsic and social motives coexist within internal innovation communities</td>
<td></td>
</tr>
<tr>
<td>CC8 Motivational barriers hamper OI and are anchored in particular innovation environments</td>
<td></td>
</tr>
</tbody>
</table>

**RP1: Demotivation (linked to RQ1)**

An internal innovation community is influenced by work, cultural and relationship factors. Barriers related to these factors are potential sources of demotivation.

**RP2: Remotivation (linked to RQ2)**

Motivational barriers for members of internal innovation communities can be overcome via remotivating actions such as perceivably eliminating motivational barriers and alternative incentives addressing intrinsic, social extrinsic and extrinsic motives.

The following conceptual framework combines the relevant concepts and derived research propositions in the context of research propositions RP1 and RP2.
3 Research methodology

This section will develop an overall research approach and justify the chosen research methods within the overall research design.

Section 3.1 contains a description of the four general research paradigms, of which one, the constructivist paradigm, was implemented in the research process. Section 3.2 describes the research framework. Section 3.3 outlines the research design itself. Section 3.4 describes the data collection method and subsection 3.5 defines the method of analysing the collected data. Section 3.6 lists limitations of the chosen research design.

3.1 Research paradigms

Reviewing academic literature in the field of business and administration always involves many different approaches to aims, methods and data. A common way to differentiate between these approaches is to consider the underlying methodology, for example qualitative or quantitative research methods. But methodology is just one facet of an overall research paradigm. According to Veal, a paradigm is

...a shared framework of assumptions held within a discipline, sub discipline or a school of thought within a discipline. It reflects a basis
set of philosophical beliefs about the nature of the world, the scientific problems which it presents and the types of solutions which arise from research. It provides guidelines and principles concerning the way research is conducted within the disciplines.

Veal, 2005, p. 24

Guba and Lincoln provide three basic categories to classify the underpinning assumptions of a paradigm: ontological, epistemological and methodological (Guba & Lincoln, 1989, p. 201).

Ontological assumptions involve the nature of reality. This sounds rather abstract, but as any research is an intellectual challenge carried out on a meta level, models are indispensable. Thus ontological assumptions can be understood as such a model, reflecting the researcher's perspective.

Epistemological assumptions involve how knowledge is acquired. They stress the analytical status of the researcher's position and his relationship to the observed actors. The process of perception differs depending on whether the researcher sees himself as an objective and independent observer or as an influential part of the research setup.

Methodological assumptions involve different methods of conducting research. They affect how the inquirer will achieve the necessary findings based on the constraints from the ontological and epistemological assumptions. Thus the three different categories form a hierarchy of assumptions, where definitions from earlier categories determine constraints for the next.

The three basic categories of assumptions within a research paradigm also determine further aspects of social research procedures such as typical research designs, inquiry aims and types of data. Table 16 outlines the four essential paradigms: positivism, post-positivism, critical theory and constructivism, as explained by Guba and Lincoln (Guba & Lincoln, 1989, p. 203).
Table 15: Differentiating factors of research paradigms in social science

<table>
<thead>
<tr>
<th></th>
<th>Positivism</th>
<th>Post-positivism</th>
<th>Critical Theory</th>
<th>Constructivism</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ontology</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“What is our picture/model of reality?”</td>
<td>Naive realism: “real” reality but apprehensible</td>
<td>Critical realism: “real” reality but only imperfectly apprehensible</td>
<td>Historical realism: virtual reality shaped by social, political, cultural, economic, ethnic, and gender values; crystallised over time</td>
<td>Relativism: local and specific constructed realities</td>
</tr>
<tr>
<td><strong>Epistemology</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“How is knowledge acquired?”</td>
<td>Dualist/objectivist; findings true</td>
<td>Modified dualist/objectivist; critical tradition/community; findings probably true</td>
<td>Transactional/subjectivist; value-mediated findings</td>
<td>Transactional/subjectivist; created findings</td>
</tr>
<tr>
<td><strong>Methodology</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“How is research conducted?”</td>
<td>ExperimentaI/manipulative, verification of hypotheses, qualitative methods</td>
<td>Modified experimental/manipulative, falsification of hypotheses, quantitative methods but also qualitative methods may be included</td>
<td>Dialogic/dialectical</td>
<td>Hermeneutical/dialectical</td>
</tr>
<tr>
<td><strong>Design</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“What shape does the research process take?”</td>
<td>Deductive by nature: 1) Theory/hypothesis/explanation 2) Observation/description/data collection 3) Analysis</td>
<td>Rather inductive by nature: 1) Observation/description/data collection 2) Analysis 3) Theory/hypothesis/explanation</td>
<td>Understanding, reconstruction</td>
<td></td>
</tr>
<tr>
<td><strong>Inquiry Aim</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“What is the goal of this research paradigm?”</td>
<td>Explanation: prediction and control</td>
<td>Critique and transformation Restitution and emancipation</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Type of data</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“What kind of data is used?”</td>
<td>Statistical and mathematical in nature, structured, often produced in the scope of the research (primary data)</td>
<td>Includes review of secondary and semi-structured data such as in depth-interviews or document reviews</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These four paradigms can be divided into two different classes. The conservative class includes positivism and post-positivism, which work on the assumption that there is one true reality, the observer is
fully independent and research is conducted in accordance with strategies typical of natural science. Research often focuses on small-scale exploration, but findings are applicable to a larger set of use cases. Positivist approaches are very straightforward and focused and occupy a rather limited solution space. The disadvantage seems to be that the observed issues must necessarily already exist and therefore cannot be new or revolutionary to the world of business.

The progressive class includes critical theory and constructivism and is more critical and constructive about what we already know. This class allows a higher degree of creativity in constructing findings and thus provides a certain amount of leeway in setting the parameters of the potential outcome. This leeway exposes these approaches to criticism of their scientific stability, and they are often vulnerable from a positivist perspective. On the other hand, these paradigms can significantly contribute to business research as they are based on mankind's unique aptitude for creative thinking. This can result in the creation of completely new knowledge, which can bring competitive advantage to companies or even whole societies.

3.2 Research design

The research project subscribes to the constructivist paradigm, which will now be explained by considering its ontology, epistemology and methodology.

Ontology:

The research framework implies the existence of different realities: an embedded community reality, which is influenced by its context, and the company reality. The innovation process also involves roles which must be filled by human beings. The framework assumes people behave differently depending on their role.
Epistemology:

The research questions, point to an individual reality which stimulates individual motivation. The research questions are thus anchored in a relativistic view of the world. This is particularly important as the theoretical underpinnings of the two guiding theories of motivation focus on intrinsic motivational factors, which are related to different norms, values, needs and people’s inherent dispositions.

Methodology:

The research framework contains two complementary concepts of motivation (extrinsic and intrinsic motivation versus avoiding demotivation) with rival components. It assumes that human motivational behaviour can be explained by applying these theories. Considering partly rival theories leads to different explanations and this might expand the existing theories. It further assumes that there are complex relationships between a community and its context, which cannot be expressed via a model based on a set of dependent and independent variables. All these factor support adopting a dialectical and hermeneutical research path instead of an experimental one, which would focus on verifying or falsifying hypotheses.

The paradigmatic triangle linking ontology, epistemology and methodology paves the way for the case study research method. This approach is also supported by the fact that the most substantial papers within the literature review on motivation also employed case studies as part of a constructivist paradigm (Antikainen et al., 2010; Muhdi & Boutellier, 2011; Motzek, 2006; Jeppesen & Frederiksen, 2006)

According to Veal, case study research is a detailed and holistic examination of a case as a single instance of some phenomenon of interest. In this context, a case study is “focused on a single example, such as a single organisation, or a part of an organisation,
for example a work unit or workplace, or a product or an event” (Veal, 2005, p. 169). This makes it different from other methods, which often rely on a large number of cases. Thus it cannot claim to produce generalisable results, but it can contribute to evaluating the validity of a theory within one or more cases. It can also generate findings which lead to a theory or hypothesis which might be found to be representative by subsequent quantitative research.

Using so-called “triangulations”, case study research often combines different approaches, such as qualitative and quantitative methods and a variety of data collection methods. Based on work by Veal, the following tables summarise the particular merits of the case study method as criteria to be referenced later on.

Table 16: Merits of case study research

<table>
<thead>
<tr>
<th>Criterion ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>The ability to place people, organisations, events and experiences in their social and historical contexts</td>
</tr>
<tr>
<td>C2</td>
<td>The ability to treat the subject of study as a whole, rather than abstracting a limited set of preselected features</td>
</tr>
<tr>
<td>C3</td>
<td>The implicit presence of multiple methods, which is seen as a strength</td>
</tr>
<tr>
<td>C4</td>
<td>Individual (or limited numbers of) cases, which makes data collection manageable when resources are limited</td>
</tr>
<tr>
<td>C5</td>
<td>A flexible data collection strategy, which allows researchers to adapt their research strategy as the research proceeds</td>
</tr>
<tr>
<td>C6</td>
<td>No requirement to generalise to a broader approach</td>
</tr>
</tbody>
</table>

Table 16 shows appropriate use cases of case study research, as given by Veal (Veal, 2005, p. 4). These are labelled as further criteria for later use.
Table 17: Scenarios for case study research

<table>
<thead>
<tr>
<th>Criterion ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C7</td>
<td>Testing a single theory: The case study confirms applicability of the theory in at least one setting or, alternatively, raises doubts as to its applicability and suggests modification or alternatives</td>
</tr>
<tr>
<td>C8</td>
<td>Testing alternative / competing theories: The case study demonstrates that one theory works better than another in a particular situation, or that neither works</td>
</tr>
<tr>
<td>C9</td>
<td>Developing a theory where none exists: The case study allows a possible theory to be formulated. Constructed example: Developing a totally new theory about innovation approaches in a company</td>
</tr>
<tr>
<td>C10</td>
<td>Testing the effectiveness of a single policy: The case study confirms the effectiveness of the policy in at least one setting or, alternatively, raises doubts as to the effectiveness of the policy and possibly suggests alternatives or modifications</td>
</tr>
<tr>
<td>C11</td>
<td>Testing alternative / competing policies: The case study demonstrates that one policy is more effective than another in a particular situation, or that neither works</td>
</tr>
<tr>
<td>C12</td>
<td>Establishing a need for policy measures: The case study outlines the current problems and their likely causes and suggests the need for policy action</td>
</tr>
</tbody>
</table>

Providing even more depth, Yin argues using representative examples that the case study method can be used for explanatory, descriptive and exploratory research. He defines case studies as an

…empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between the phenomenon and the context are not clearly evident. It copes with the technically distinctive situation in which there will be many more variables of interest than data points. It relies on multiple sources of evidence, with data needing to converge in a triangulating fashion. It benefits from the prior development of theoretical propositions to guide data collection and analysis.

Yin, 2009, p. 6

From Yin’s perspective, the use of case study research depends on (a) the type of research question is posed, (b) the extent of control an investigator has over actual behavioural events and (c) the degree of focus on contemporary as opposed to historical events.
Table 18: Characteristics of different research methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Type of question</th>
<th>Does it require control of behavioural events?</th>
<th>Does it focus on contemporary events?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>how, why?</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Survey</td>
<td>who, what, where, how, many, how much?</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Archival analysis</td>
<td>who, what, where, how many, how much?</td>
<td>no</td>
<td>yes/no</td>
</tr>
<tr>
<td>History</td>
<td>how, why?</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Case study</td>
<td>how, why?</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

The following table summarises Yin’s further criteria for case study research (Yin, 2009, pp. 3–23)

Table 19: Criteria for case study research according to Yin (2009)

<table>
<thead>
<tr>
<th>Criterion ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C13</td>
<td>Researching a case as a whole, not a collection of variables (whole entity)</td>
</tr>
<tr>
<td></td>
<td>Documenting complexity, interpreting in context, observing in natural conditions and communicating in the natural language of participants</td>
</tr>
<tr>
<td></td>
<td>Aiming to develop as full an understanding of the case as possible</td>
</tr>
<tr>
<td>C14</td>
<td>“Why?” and “How?” questions which deal with operational links over time rather than simply frequencies and incidents</td>
</tr>
<tr>
<td>C15</td>
<td>Investigator has no or little control over behavioural events</td>
</tr>
<tr>
<td>C16</td>
<td>In-depth understanding / investigation of a contemporary phenomenon within its real life context, especially when the boundary between the phenomenon and its context is unclear</td>
</tr>
<tr>
<td>C17</td>
<td>Prompted by unusual success or failure</td>
</tr>
<tr>
<td>C18</td>
<td>Many more variables than data points</td>
</tr>
<tr>
<td>C19</td>
<td>Benefits from the prior development of theoretical propositions to guide data collection and analysis</td>
</tr>
<tr>
<td>C20</td>
<td>Explains presumed causal links between real life interventions that are too complex for a survey or an experiment</td>
</tr>
<tr>
<td>C21</td>
<td>Small group behaviour or organisational and managerial processes</td>
</tr>
</tbody>
</table>
Table 19 maps the relevant criteria for case study research to the different facets of the research framework to show why case study research is appropriate for the current research problem.

Table 20: Rationale for using case study research for this research problem

<table>
<thead>
<tr>
<th>Selected criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit of analysis</td>
<td>C1, C16, C21 The ability to place people, organisations, events and experiences in their social and historical contexts. In-depth understanding / investigation of a contemporary phenomenon within its real life context, especially when the boundary between the phenomenon and its context is unclear. Small group behaviour or organisational and managerial processes.</td>
</tr>
<tr>
<td>Type and depth of research</td>
<td>C2, C13, C15, C18, C20 The ability to treat the subject of study as a whole, rather than abstracting a limited set of preselected features. Researching a case as a whole, not a collection of variables (whole entity). Documenting complexity, interpreting in context, observing in natural conditions and communicating in the natural language of participants. Aiming to develop as full an understanding of the case as possible. Investigator has no or little control over behavioural events. Many more variables than data points. Explains presumed causal links between real life interventions that are too complex for a survey or an experiment.</td>
</tr>
<tr>
<td>Research trigger</td>
<td>C17 Prompted by unusual success or failure.</td>
</tr>
<tr>
<td>Access to resources and required resources</td>
<td>C4 Individual (or limited numbers of) cases, which makes data collection manageable when resources are limited.</td>
</tr>
</tbody>
</table>

The research framework fulfills criteria C1, C16 and C21 because the conceptual framework suggests two internal communities as units of analysis. The social context is the company. The boundary between the company and the community is unclear.

The research framework fulfills criteria C2, C13, C15, C18 and C20 because it does not seem possible to build a model based on independent and dependent variables which does justice to the research questions. The way a community is influenced by the company context (strategy, culture and organisation) cannot be measured in a post-positivistic way. Typical communities develop complex and multilateral communication relationships. These factors do not allow a systematic control of the research setting.

The research framework fulfills criterion C17 because as described in the introduction, the research questions where derived from practical problems which arose from a failure to establish a community-based innovation process. The trigger is thus based in an unusual failure.

The research framework fulfills criterion C4 because...
…as an employee (management level) of the parent company, the researcher has full access to all relevant participants, documents and community contexts.

| Theory handling | No requirement to generalise to a broader approach  
|                | Testing alternative / competing theories  
|                | Benefits from the prior development of theoretical propositions to guide data collection and analysis |

The research framework fulfils criteria C6, C8 and C16 because…

…the research framework suggests two alternative concepts of motivation to be tested (extrinsic and intrinsic motivation vs. avoiding demotivation). The initial aim is to test or even expand the underpinning concepts instead of generalising results to a wider population.

<table>
<thead>
<tr>
<th>Kind of research questions</th>
<th>“Why?” and “How?” questions which deal with operational links over time rather than simply frequencies and incidents</th>
</tr>
</thead>
</table>

The research framework fulfils criterion C14 because…

…RQ1 and RQ2 are “How?” and “Why?” questions as they focus on participants’ perceptions. The investigation aims to gain an “insight into perceptions, opinions, beliefs and feelings”, which are typical qualities of qualitative research (Hennink, Hutter, & Bailey, 2011, p. 35)
3.3 Case design and units of analysis

According to Yin the study was designed as a single case with two embedded units of analysis. The rationale for this approach bases on three different arguments. Firstly the case critically tests existing theory as explained within the construction of the research framework.

A further reason is given by the situation that chosen communities and their context represent a very typical case. As already shown in the literature review internal communities are a very common phenomenon within innovation management. The location within a standard financial institute also supports this argument.

A third reason for a single case design can be seen in the researcher’s unique access to this kind of innovation communities. As he is a colleague the community members trust him. Thus the opportunity arises to talk about very critical topics such as frustration, management perception or other critical influences to the communities (Yin, 2009, p. 47).

Table 21: Rationale for using a single case design for this research problem

<table>
<thead>
<tr>
<th>Rationale for a single case design</th>
<th>Coverage of rationale within the given case</th>
</tr>
</thead>
<tbody>
<tr>
<td>The case critically tests an existing theory</td>
<td>Rationale is very dominant due to the research design primarily testing the motivation theory of Wunderer and Küpers combined with the concept of intrinsic and extrinsic motivation.</td>
</tr>
<tr>
<td>The case represents a rare or unique circumstance</td>
<td>Rationale is not given.</td>
</tr>
<tr>
<td>The case is representative or a very typical</td>
<td>Rationale is very dominant due to the fact that such communities are an often used innovation approach as shown in the literature review.</td>
</tr>
<tr>
<td>The researcher has a unique access to the research object</td>
<td>Rationale is very dominant due to the fact that it is difficult for external researchers to get in contact with internal community members and to build the necessary trust required for critical in-depth interviewing.</td>
</tr>
<tr>
<td>The case has a longitudinal dimension</td>
<td>Rationale is not given at all.</td>
</tr>
</tbody>
</table>
The embedded units of analysis will be represented by two different internal innovation communities on different social media software platforms.

![Diagram of embedded units of analysis]

**Figure 8: Embedded units of analysis**

Participants of both communities were experts in their particular fields of work and all of them had job descriptions which contain innovation goals.

The communities were hosted within different companies in the BSH Group. Thus participants displayed different business functions, stages of professional development, ages and genders. The first community, called “service functions”, was hosted in a BSH service company called Schwäbisch Hall Kredit Services. This daughter company has 2,500 employees and handles the entire group IT and credit processing functions. The participants had service functions and worked in innovation fields such as improving business processes or developing new IT and processing services.

The second group, called “market functions”, was located in BSH itself. It primarily contained sales, marketing and IT management functions, with participants working in different innovation fields such as developing and launching new financial products and services.

### 3.3.1 The service functions community (C1sf)

Ten experts with a minimum of at least five years of work experience were involved in the service functions community. The participants
were chosen in equal numbers from the credit processing and IT departments. All of them had job descriptions which contain innovation goals. Participation was voluntary. It started in May 2011 and ended six months later.

The innovation platform consisted of a computer-aided ideation process and a professional social media-based collaboration platform. The software (Lotus Connections 3) was provided by IBM as a software-as-a-service solution and by the open source platform Open-I featuring the ideation process. Lotus Connections 3 provides all the standard social media features, but has some weaknesses in process guidance (see Appendix D). The Open-I process add-on delivered a staging process from idea generation to development, evaluation and implementation.

The moderator delivered an innovation challenge which was subject to democratic alignment processes containing innovation goals and contribution methods. The participants then had to post and discuss their ideas on this platform.

The participants were subsequently asked to complete a SWOT analysis containing strengths and weaknesses along with the opportunities and risks of this innovation approach. This document, along with eight in-depth interviews and a closed questionnaire, provides the database for the first community and serves as an important data source within the later scientific analysis.

### 3.3.2 The market functions community (C2mf)

Twenty-five experts with a minimum of at least 5 years of market experience were involved in the market functions community. All of them had job descriptions containing innovation goals. The participants were chosen in equal numbers from the sales, marketing and IT management departments. Participation was voluntary. It started in December 2014 and ended six months later.
The innovation platform consisted of a computer-aided ideation process and was provided on ITONICS Idea-Manager social collaboration platform. The innovation challenge was provided by the innovation manager to deliver an innovation direction and get a feeling for participants’ reactions to the importance and impact of given innovation goals. The platform provided all the necessary social media features described in earlier stages of this work (see Appendix C).

The expert professionals were asked to post ideas supporting the idea campaign/challenge and to discuss and enrich ideas of other participants. Twelve in-depth interviews were later carried out. These interviews, along with a closed questionnaire, provide the database for the second community and serves as the main data source for this unit of analysis.

3.3.3 Similarities and differences between the communities
Every participant in both communities had an academic or equivalent background and their job descriptions involved contributions towards their company’s innovation goals. Unfortunately, this important characteristic led to an unequal gender distribution and slightly different stages of professional development (duration of professional experience and hierarchical positioning within the company). But the high expert level of all participants and the democratic community setup seemed to render these deviations negligible.

To include as many different business contexts as possible, two different companies with different business functions were chosen. In this context, the standard industry differentiation between market functions and service functions seemed appropriate. The technological setups were also varied due to the companies’ different IT strategies. This allowed the influence of the different philosophies and usabilities of the IT platforms to be determined.
### Table 22: Similarities and differences between the communities

<table>
<thead>
<tr>
<th></th>
<th>C1sf</th>
<th>C2mf</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Professional background</strong></td>
<td>Experts with an academic or equivalent background with a high affinity to innovation tasks based on their job descriptions</td>
<td>Experts with an academic or equivalent background with a high affinity to innovation tasks based on their job descriptions</td>
</tr>
<tr>
<td><strong>Years of professional experience</strong></td>
<td>5 to 15 years</td>
<td>5 to 25 years</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>Male (~75%) and female (~25%)</td>
<td>Male (~80%) and female (~20%)</td>
</tr>
<tr>
<td><strong>Companies</strong></td>
<td>Financial service provider (market leader in mortgaging and house saving)</td>
<td>Outsourced service functions in credit processing and IT</td>
</tr>
<tr>
<td><strong>Business Functions</strong></td>
<td>Marketing, sales, IT management</td>
<td>Credit processing and IT delivery</td>
</tr>
<tr>
<td><strong>SaaS-Information Technology</strong></td>
<td>Lotus Connections and Open I</td>
<td>ITONICS Idea-Manager</td>
</tr>
</tbody>
</table>

### 3.4 Data collection

According to Yin, the case study approach benefits from multiple sources of evidence. He describes data triangulation as a method of collecting data from different sources to investigate and explain a particular fact. This can be achieved in different ways. The stronger approach is chosen when different data sources point to the same fact (upper portion). A weaker approach uses different data sources to point to different facts (lower portion). A further method of triangulation is when different researchers are used to support a particular fact (investigator triangulation). Yet another method of triangulation involves discussing the dataset from different perspectives (theory triangulation). Finally, method triangulation is used to extract facts via different methods, e.g., quantitative and qualitative methods (Yin, 2009, p. 116).

Three different triangulation methods were chosen: theory triangulation, data triangulation and method triangulation. The research process was divided into different research steps with a deductive or inductive nature. A research step is deductive when it is directly guided by findings from prior literature (explanation → data collection/observation → analysis). A research step is inductive when the findings are constructed using data from prior research steps or
the research step itself (data collection/observation→analysis→explanation).

**Step 1: 2014 opinion survey**

The first analysis step was dominated by an opinion survey carried out by the BSH group carried in 2014. From the broad range of questions asked in this survey, we selected those related to the research gap and the research questions from this study. The discussion of the results of this survey extract provide an overview of the general context of the two communities and a starting point for the next data collection and analysis steps.

**Step 2: Questionnaire**

The second data analysis step was deductive in nature. It followed RP1 and RP2 and aimed to discover which motivational factors and barriers prevail within the two communities (see Appendix A). Therefore, typical motivational factors and barriers in OI communities were collected within the literature review. Using a questionnaire, these factors were assessed by community members via a 4-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree). To ensure compliance with the universities ethical standards the ethics committee of the CSU were involved. According to their requirements all participants were asked to agree to the procedure described in Appendix E and F.

**Step 3: In-depth interviews and document analysis of C1sf**

The third research step contained inductive and deductive parts. Eight in-depth interviews were carried out and transcribed. Deductive coding was then performed based on the general motivators and barriers from the questionnaire in step 2 (see also Appendix G + H).

The second coding iteration was inductive in nature, looking for participants’ behavioural expectations of management roles. In addition, documents from a related innovation project were
The interviews were conducted on BSH premises in prepared meeting rooms. Only the researcher and one interviewee have been present at the same time.

**Step 4: In-depth interviews and document analysis of C2mf**

The fourth research step was divided into inductive and deductive parts. Twelve interviewees were interviewed to reach an overall count of 20. This number of interviews was sufficient to reach saturation, as step 2 had already provided a very strong understanding of motivators and barriers in this innovation setup. Deductive coding was then carried, based on the general motivators and barriers from the questionnaire in step 2 (see also Appendix G+H).

The second coding iteration was inductive in nature and investigated participants’ behavioural expectations surrounding management roles in the community process. Documents from a related innovation project were also integrated. The interviews were conducted on BSH premises in prepared meeting rooms. Only the researcher and a single interviewee were present at any given time.

**Step 5: Data and concept triangulation**

The final research step was analytical in nature. It followed RP1 and RP2 and aimed to determine how both concurrent theories of motivation are supported by the data derived from the earlier research steps, especially the motivating and demotivating perceptions. It integrated the data from all prior research steps and compared the data from both communities (units of analysis). This procedure is called theory/concept triangulation and tries to affirm the underpinning concepts or theories or to expand one or both of them.

The following figure summarises the entire research process along with the interplay of the chosen methods.
3.4.1. Design cycle of questionnaires

In accordance to Hennik, Sutter and Bailey the design of qualitative research should follow an iterative and cyclic process. The design of questionnaires, as part of qualitative research, follows such an approach either and starts during the design cycle and continues during the ethnographic cycle. In doing so, the embedded concepts of the research framework as well as the research questions and research propositions served as relevant guidelines for the identification of questions.

The following model of Hennink, Sutter and Bailey served as methodological guideline for the construction of the overall research design (Hennink et al., 2011, p. 4).
The questionnaire of research step 2 contains closed questions as already explained. Following the conceptual framework it directly asks about participants’ perception of concrete motivators and barriers collected from literature review in advance. The design process as well as the Likert scaling of this research tool strictly followed Veal (Veal, 2005, p. 153).

The design of the open-ended questions of research step three and four followed Hennink, Sutter and Bailey. Implementing their recommendations towards the interview structure (introduction, background information, opening questions, main questions, closing questions) it was also followed their approach towards formulating interview questions. In this conjunction the direct way of asking for
motivators and barriers from research step 2 was strictly avoided in favour of a more abstract way of asking for consequences or perceptions of people’s actions. The answers were then linked to motivating or demotivating perceptions and delivered new possibilities to ask around the actual object of analysis (see also requirements and explanations of data triangulation in research step 5).

3.5 Data analysis
All the data produced during the various research steps was analysed using QSR NVivo 10 qualitative software suite and Microsoft Excel for quantitative analysis.

Quantitative analysis
The following set of evaluation rules guided the evaluation process during research step 5.

The items on the questionnaire were assessed using a 4-point Likert scale (1 = strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree). The mean values were generated for each community, along with an overall mean value.

Items (motivators or barriers) with a mean community value under 2.5 were dropped from further discussion because they appeared so weakly that further consideration seemed unwarranted and ran the risk of overtreatment or courting confusion by looking at too many incentives or other measurements simultaneously. The area between 2.5 and 4 was divided into three areas 2.5 to 2.74, 2.75 to 3.24 and the rest 3.25 to 4. This classification is asymmetric and arbitrary and has only the purpose of categorizing the relevance of the results. In order to avoid underestimation the distances were chosen as growing multiples of 0.25 (1 x 0.25, 2 x 0.25 and 3 x 0.25).

Items with mean community values between 2.5 and 2.74 were judged to be relevant but optional. Items with mean community
values between 2.75 and 3.24 were classified as definitely relevant and essential to consider. Items with a mean community value between 3.25 and 4.0 were classified as highly relevant and one of the main factors in process success.

If the community mean values for an item differed by >= 0.3, they were earmarked for further discussion. The Likert scale employed contains 30 values from 1.0 to 4.0 with a distance of 0.1. A deviation value of 0.3 indicates a deviation of mean values of about 10% and is thus treated as significant.

This quantitative perspective was complemented with deductive qualitative data for each item. Inductive qualitative data was used to identify management roles and their ideal management behaviour within such a process setup.

**Qualitative analysis**

Every document was imported into the NVivo 10 database for computer-aided analysis. Deductive and inductive coding was then performed using software-aided processes and data reports were generated.

For this purpose, some information (e.g., certain sections of the interview transcriptions) was assigned to so-called “notes”. This was possible by using deductive analysis to identify topics and themes related to prior literature research and the research framework (theoretical concepts, research propositions and research questions).

These notes were then seeded with socio-demographic data. They work as information containers within NVivo 10 and allow complex analytic reports such as for example the existence of motivators within a certain group of interviewees.

Inductive analysis was used to identify new themes and topics which emerged from iterative data analysis and seed these within the
information containers. This method was used to extract the expectations of the communities towards management behaviour.

NVivo 10 assigns relations between all the information containers and uses these to create queries and reports. This creates a new perspective on the data and facilitates even very complex queries about perceptions of specific classes of issues (e.g., relationship barriers) by different classes of participants (e.g., age groups). Figures 9 and 10 show examples of various nodes (e.g., “barriers related to working context”) and subnodes (e.g., B30 = resistance to technology.)
3.6 Methodological limitations

As creative and inductive findings belong to that research approach, supporters of a positivist view note that this research method may be insufficiently reliable and subject to high variance. To manage this risk two embedded units of analysis were taken into account. The research framework contains evaluation criteria discussed in advance.

This reliance on just one case with a small number of participants may seem vulnerable because of the limited space for generalising the findings for many or all cases and participants. It is important to remember that the chosen research design aims to discuss the underpinning theories and concepts and does not claim to be able to generalise the results, which is a clear limitation in terms of reusing the findings for the whole industry. Instead, the research is based on the weaker claim that the validity of one or more theories must hold even for a small number of cases and participants (Yin, 2009, p. 6).

In addition, case studies run the risk of verification bias, i.e., a tendency to confirm the researcher's preconceived notions. To limit this risk it is vital to carefully maintain transparency throughout the
entire research process by implementing different sources of evidence, setting up a research database and maintaining a chain of evidence (Yin, 2009, pp. 114–122).

Case study research is constantly evolving. Thus data collection and inquiry methods can change or be adjusted during the research process. Critics might say that this kind of change is haphazard and not well-planned and thus invalid. But the chosen research process should limit this risk, as it contains clear steps with a traceable set of predefined results. It also employs a set of mixed methods which incorporate different sources of evidence. Although these preventative measures have been taken, the methods and data may still be vulnerable. Therefore, the results definitely need further scientific confirmation, preferably through future quantitative research.

In addition, the focus of this study has been limited to financial services. Especially the rankings refer to a very limited number of participants. Therefore it is suggested to only use them within the BSH group itself. Ideally the results should be validated within other industrial contexts and with a larger number of participants.
4 Results

This chapter contains the results of the data analysis process described above. It begins with a general overview of the contexts of the two communities by presenting a subset of the 2014 opinion survey carried out by the BSH Group before the in-depth interviews were conducted. This also included participants’ perceptions of the innovation environment. Thus the importance of innovation, the competitive environment in the financial sector and innovation culture will be considered (section 4.1). Next, the instances of relevant motivators and barriers will be presented in sections 4.2 and 4.3, following the structure shown in Table 21:

Table 23: Structure of presenting the appearances of motivators and barriers

<table>
<thead>
<tr>
<th>Structure</th>
<th>Number</th>
<th>Ranking</th>
<th>Method of presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic motivators</td>
<td>Mx</td>
<td>I1-Iy</td>
<td>Presentation of results of the assessments, by item and community</td>
</tr>
<tr>
<td>Extrinsic motivators</td>
<td>Mx</td>
<td>E1-Ey</td>
<td></td>
</tr>
<tr>
<td>Social extrinsic motivators</td>
<td>Mx</td>
<td>SE1-SEy</td>
<td>Extraction of typical appearances of a specific motivator or barrier (M1-Mx; B1-Bx)</td>
</tr>
<tr>
<td>Barriers related to work factors</td>
<td>Bx</td>
<td>W1-Wy</td>
<td>Differences in item values and content between the two communities (if they exist)</td>
</tr>
<tr>
<td>Barriers related to cultural factors</td>
<td>Bx</td>
<td>C1-Cy</td>
<td></td>
</tr>
<tr>
<td>Barriers related to relationship factors</td>
<td>Bx</td>
<td>R1-Ry</td>
<td></td>
</tr>
</tbody>
</table>

Section 4.4 looks at identified management roles and the expected role behaviour from a community perspective.

4.1 Perception of surrounding conditions

This section contains different views on the surrounding conditions of the two communities. Sections 4.1.1 and 4.1.2 begin with a selection
of items from an opinion survey conducted in 2014. As this is carried out every two years, it also contains comparison values for the 2012 survey. Section 4.1.3 presents community members’ perceptions about the importance of innovation in general. Section 4.1.4 complements these viewpoints by presenting community members’ perceptions of the latest innovations. Section 4.1.5 looks at the perception of the competitive market position and section 4.1.5 ends with the perception of innovation culture in general.

### 4.1.1 Surrounding conditions for C1sf (service functions)

The following questions represent a subset of the 2014 opinion survey, reflecting relevant items about the community context of C1sf. In total, 1623 of 1965 participants answered an anonymous web-based questionnaire (82.6%).

**Table 24: Items relevant to C1sf from the 2014 opinion survey**

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Scale</th>
<th>2014 results</th>
<th>2012 results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How satisfied are you with your employer?</td>
<td>Very satisfied + satisfied</td>
<td>89%</td>
<td>87%</td>
</tr>
<tr>
<td>2</td>
<td>How satisfied are you with your current working situation?</td>
<td>Very satisfied + satisfied</td>
<td>80%</td>
<td>69%</td>
</tr>
<tr>
<td>3</td>
<td>How satisfied are you with management in general?</td>
<td>Very satisfied + satisfied</td>
<td>86%</td>
<td>81%</td>
</tr>
<tr>
<td>4</td>
<td>How satisfied are you with direct management?</td>
<td>Very satisfied + satisfied</td>
<td>92%</td>
<td>90%</td>
</tr>
<tr>
<td>5</td>
<td>How satisfied are you with your employment in general?</td>
<td>Very=1; Not at all=6</td>
<td>2.3</td>
<td>2.3</td>
</tr>
<tr>
<td>6</td>
<td>Would you recommend the company as an employer, e.g., to your friends?</td>
<td>Very=1; Not at all=6</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>7</td>
<td>If you could decide now, how likely would you be to apply for a job at the BSH?</td>
<td>Very=1; Not at all=6</td>
<td>2.4</td>
<td>2.3</td>
</tr>
<tr>
<td>8</td>
<td>How do you perceive the motivation of your colleagues?</td>
<td>Very high=1; Not at all=6</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>9</td>
<td>How strongly do you identify with the company?</td>
<td>Very strongly=1; Very weakly=4</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>10</td>
<td>The collaboration between my unit and others is of a cooperative and trusting nature.</td>
<td>Strongly agree =1; Strongly disagree=4</td>
<td>2.0</td>
<td>2.2</td>
</tr>
<tr>
<td>11</td>
<td>The measurements derived from evaluating this survey will lead to noticeable improvements.</td>
<td>Strongly agree =1; Strongly disagree=4</td>
<td>2.3</td>
<td>2.3</td>
</tr>
</tbody>
</table>
4.1.2 Surrounding conditions for C2mf (market functions)

The following questions represent a subset of the 2014 opinion survey reflecting items relevant to the community context of C2mf. In total, 663 of 816 participants answered an anonymous web-based questionnaire (78.2%).

Table 25: Items relevant to C2mf from the 2014 opinion survey

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Scale</th>
<th>2014 result</th>
<th>2012 result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How satisfied are you with your employer?</td>
<td>Very satisfied + satisfied</td>
<td>92%</td>
<td>96%</td>
</tr>
<tr>
<td>2</td>
<td>How satisfied are you with your current working situation?</td>
<td>Very satisfied + satisfied</td>
<td>84%</td>
<td>85%</td>
</tr>
<tr>
<td>3</td>
<td>How satisfied are you with management in general?</td>
<td>Very satisfied + satisfied</td>
<td>80%</td>
<td>86%</td>
</tr>
<tr>
<td>4</td>
<td>How satisfied are you with direct management?</td>
<td>Very satisfied + satisfied</td>
<td>91%</td>
<td>91%</td>
</tr>
<tr>
<td>5</td>
<td>How satisfied are you with your employment in general?</td>
<td>Very high=1; Not at all=6</td>
<td>2.1</td>
<td>1.9</td>
</tr>
<tr>
<td>6</td>
<td>Would you recommend the company as an employer, e.g., to your friends?</td>
<td>Very high=1; Not at all=6</td>
<td>2.4</td>
<td>1.9</td>
</tr>
<tr>
<td>7</td>
<td>If you could decide now, how likely would you be to apply for a job at the BSH?</td>
<td>Very high=1; Not at all=6</td>
<td>2.3</td>
<td>1.9</td>
</tr>
<tr>
<td>8</td>
<td>How do you perceive the motivation of your colleagues?</td>
<td>Very high=1; Not at all=6</td>
<td>2.1</td>
<td>2.0</td>
</tr>
<tr>
<td>9</td>
<td>How strongly do you identify with the company?</td>
<td>Very strong=1; Very weak=4</td>
<td>1.8</td>
<td>1.6</td>
</tr>
<tr>
<td>10</td>
<td>The collaboration between my unit and others is of a cooperative and trusting nature.</td>
<td>Strongly agree =1; Strongly disagree=4</td>
<td>2.0</td>
<td>2.1</td>
</tr>
<tr>
<td>11</td>
<td>The measurements derived from evaluating this survey will lead to noticeable improvements.</td>
<td>Strongly agree =1; Strongly disagree=4</td>
<td>2.5</td>
<td>Not available</td>
</tr>
</tbody>
</table>

4.1.3 Perception of the importance of innovation (both communities)

Every participant in both communities claimed that innovation is a very important topic. One participant stated “… long-term success is
impossible without innovation. As a market leader, we have to keep up with new inventions to maintain our position.”

An even stronger position was adopted by a participant who said that innovation is “…the prime mover in any company. Without it it’s just a matter of time before you cease to exist.”

Another perspective was provided by a participant from the human resources department, who asserted that innovation is important “…because we have a lot of young employees. They use other communication tools like Skype. They find it quicker and easier to work using new media”.

Another participant asked “…how (if not with innovation) can we differentiate ourselves in a market where there is so much similar competition? We must set ourselves apart, either with new products or services.”

This view was supported by a participant who insisted that innovation is the driver “…to optimise internal processes and routines and deliver innovative services to customers.”

Digitalisation was frequently mentioned as a major driver of innovation in the banking sector. This is “…a critical flow induced by Information Technology. We must deal with it, because otherwise we … could be cornered and will probably lose our strong market position”. Not only technology but also “…regulation and steadily dropping interest rates are bringing about changes in our company.”

4.1.4 Perception of the latest innovations (both communities)

When asked about their perception of the latest innovations from the BSH Group, most interviewees had to think for quite a few seconds or could not recall any innovations at all. Hardly anyone was able to immediately summon up an example. Many mentioned the improvement of the status quo such as the “…improvements to customer access via digital channels such as our online service
platform and the digital message system... along with the digitalisation of credit applications” as innovations. This was supported by the participant who stated “…that by the end of next year, our customers will be able to sign up for digital account statements.”

“Lean credit” and the use of SAP software were also seen as innovations. One interviewee reported “…an amazing boost in processing speeds”, while another participant thought “… our new tariff with variable interest rates is a tremendous innovation. But to be honest, that’s it. I can’t think of any other innovations beside that.” Another stated “… as far as I know, there is a pilot project for digital signatures. I also heard we have been on Facebook for some time.”

But most interviewees reported a lack of real innovations. One participant said “…we modify some aspects of our product but for me that doesn’t qualify as innovation”. Another referred to the length of time it takes to get an online password, saying “…it took me 20 days to become an online BSH customer. That’s not innovative.”

Another stated that in his field of work he “…feels things have been stagnant for six or seven years. We’re always talking about the same things. From my perspective this is futile. We need new ideas and incentives.”

4.1.5 Perception of competitive market position (both communities)

Most interviewees perceived the BSH Group as lagging behind when it comes to innovation. One participant thought that “…other companies are more dynamic as they are not weighed down with all this ballast from the past.” This was supported by another statement, that “…we are the market leader, but we’re not at the top of the market in innovation. Our market position is based on our sales staff and market access through our partner banks. It’s not based on
innovation. We’re less competitive than our competitors and how we used to be.”

Another participant felt that “…there is plenty of room for improvement. We haven’t reached our goals yet. One example is online access to my contract data. In my personal life my data is always online. I expect this from my employer too”.

One participant thought that “…we’re doing well compared with other credit service providers like us, but we’re lagging behind international banking standards. It takes us too long to bring out new products and launch costs are too high.”

Another participant stated that “…we’ve lost our leading technology position. Our IT architecture is no longer up to date”. This was supported by an interviewee who explained about a smartphone app which “…can photograph a bill and pay it without any human interaction. We can’t provide anything like that”. And one participant thought “…we have some great feature and are still good, but our competitors are catching up. We’re not as good as we think we are.”

4.1.6 Perception of innovation culture (both communities)

The interviewees agreed that management is aware of the importance of innovation, but they criticised the innovation culture across a lot of different dimensions. One participant thought that “…we’ve written a lot of things down on paper (visions, innovation goals), but we haven’t internalised them”.

Another reported that there is “…a mentality of playing it safe, probably due to earlier bad experiences. They (colleagues) tried to take risks, but when things went wrong they got in deep trouble.” This was supported by another participant, who explained that: “…when it comes to regulation, we tend to try and meet 120% of requirements. We don’t have an affinity for risk-taking." One explanation for this behaviour was given by a participant who believed that “…we are
influenced by our location in the southwest and the people who live here. They are addicted to working and expanding their houses and want to live in safety.”

Another stated “…that we are innovators by command but not by intuition or affinity. If we were, we would have many more opportunities”. This was supported by another interviewee who longed for a corporate culture like the one in the team bank (BSH partner bank), where: “…they can discuss ideas with top management in the lifts. It would be amazing if we could evolve a culture like that.”

Another participant criticised that: “…there is no official discussion forum for innovation other than our cafeterias”. This was supported by another participant, who said “…I don’t have a vision for where we want to be in 2020 or 2025. There’s no vision statement dealing with innovation for our different business areas.”

When it comes implementing innovative ideas, most participants criticised the “…very long paths to implementation. One example is the information cockpit for our sales staff. The idea for this tool is a couple of years old now. but it still hasn’t been implemented”. This was also reported by an interviewee who saw the “…process of ideation as a barrier more than a support. If people have too much respect for this procedure, they won’t bring in ideas anymore”. Another perspective is provided by the statement that “… everybody is focused on their own goals. This is a serious straightjacket. It needs a culture of open exchange rather than the principle of functional silos.”

4.2 Motivators

This subsection will list the appearances of all the motivators which fall under the following categories: intrinsic, extrinsic and social extrinsic. The results have been integrated with the assessments of
each motivator from the questionnaire. For the derivation of these structural elements, see section 2.

4.2.1 Intrinsic motivators

Intrinsic motivators are highly relevant. Their high importance is reflected by a mean value for this category of 3.4. To improve the explanatory power of the following mean values Appendix I contains additional information such as the standard deviation of all items in total.

Table 26: Intrinsic motivational factors, assessment values

<table>
<thead>
<tr>
<th>No.</th>
<th>Ranking</th>
<th>Intrinsic motivational factor</th>
<th>n=26 total</th>
<th>n=8 C1sf</th>
<th>n=18 C2mf</th>
</tr>
</thead>
<tbody>
<tr>
<td>M05</td>
<td>I1</td>
<td>Entrepreneurial mindset</td>
<td>3.57</td>
<td>3.375</td>
<td>3.66</td>
</tr>
<tr>
<td>M02</td>
<td>I2</td>
<td>Freedom and control</td>
<td>3.5</td>
<td>3.625</td>
<td>3.44</td>
</tr>
<tr>
<td>M06</td>
<td>I3</td>
<td>Potential later use of products, free use of products and services</td>
<td>3.42</td>
<td>3.75</td>
<td>3.27</td>
</tr>
<tr>
<td>M04</td>
<td>I4</td>
<td>Expression of creativity</td>
<td>3.34</td>
<td>3.625</td>
<td>3.22</td>
</tr>
<tr>
<td>M01</td>
<td>I5</td>
<td>Enjoyment</td>
<td>3.11</td>
<td>3.25</td>
<td>3.05</td>
</tr>
<tr>
<td>M03</td>
<td>I6</td>
<td>Intellectual stimulation and the learning experience</td>
<td>3.07</td>
<td>2.75</td>
<td>3.22</td>
</tr>
<tr>
<td>Mean:</td>
<td></td>
<td></td>
<td>3.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Entrepreneurial mindset (M05-I1)**

Quantitative statements from members of both communities support the high relevance of this item, with values of 3.38 (C1sf) and 3.66 (C2mf) and a mean of 3.57. The difference between C1sf and C2mf is significant at 0.28.

Some members of innovation communities act based on an entrepreneurial self-image. They feel the need to act to improve their company’s competitive position. Very few see themselves as entrepreneurs within the company.
This mindset was expressed by a statement from a member of C1sf. He explained “...that my contribution affects the future of the company and helps it succeed. So this helps me too.”

A member of C2mf supported this idea by stating that this was “...my way of supporting the company. That's what I want.”

Another member of C2mf felt it was positive “...feel part of improving the company.”

There was no significant difference between C1sf and C2mf for content relating to this item. This issue seems to be more important to members of sales and marketing functions. The different assessment values will be discussed in a wider scope in section 5.2.

**Freedom and control (M02-I2)**

Quantitative statements from members of both communities support the high relevance of this item, with values of 3.625 (C1sf) and 3.44 (C2mf) and a mean of 3.5. The difference between C1sf and C2mf is 0.18.

Very often freedom and control is frequently linked to a deep-seated desire to take part in something “bigger” than the functional micro-tasks of everyday work. People appreciate participating in activities that make sense in a holistic and comprehensible way. They also like to participate when, how and whatever speed they choose.

One member of C1sf made the following strong statement “... this way of innovating satisfies our desire to co-create and shape the output of our company. It enhances our corporate identity.”

A member of C2mf supported this by saying “...I can participate and give input much better now. This addresses our companywide discussion of culture and mindset. This could be an embodiment and systemisation of this discussion.” And another member of this community felt: “...I get the chance to influence things based on my own values.”
A further statement by a C2mf member expressed a positive feeling of “…being a part of the innovation process and having the chance to contribute. I enjoyed being able to participate at my own speed. Everybody can take the time they need.”

There was no significant difference between C1sf and C2mf for content relating to this item.

**Personal benefits from potential later use of products and services (M06-I3)**

Quantitative statements from members of both communities support the high relevance of this item, with values of 3.75 (C1sf) and 3.27 (C2mf) and a mean of 3.42. The difference between C1sf and C2mf is significant at 0.47.

Many members reported that personal benefits from the use of an innovation were a serious driver for participating in their community or not. These benefit ranged from improvement of service processes to the use of smartphone apps (e.g., containing information features about financial products).

A member of C2mf reported that she only saw a reason to participate “…when the subject of innovation topic affects me or my professional future within the company… and I get a personal benefit from the outcome. For selfish reasons, I wouldn’t participate otherwise.”

There was no significant difference between C1sf and C2mf for content relating to this item. This issue seems to be more important to members of service functions. The different assessment values will be discussed in a wider scope in section 5.2.

**Creative actuation (M04-I4)**

Quantitative statements from members of both communities support the high relevance of this item, with values of 3.625 (C1sf) and 3.22 (C2mf) and a mean of 3.34. The difference between C1sf and C2mf is significant at 0.40.
Participants in innovation communities seek creative alternatives. They like transferring solutions from their field of expertise to other business areas. They look for diversification from their daily routines and procedures.

Thus, a member of C2mf explained that he found it very exciting “…to transfer personal knowledge to another problem area.”

And a member of C1sf explained that he has “…a problem with routine. This method of cooperation provides a welcome break from daily routines.”

There was no significant difference between C1sf and C2mf for content relating to this item. This issue seems to be more important to members of service functions. The different assessment values will be discussed in a wider scope in section 5.2.

**Enjoyment (M01-I5)**

Quantitative statements from members of both communities support the relevance of this item, with values of 3.25 (C1sf) and 3.0 (C2mf) and a mean of 3.11. The difference between C1sf and C2mf is 0.19.

Enjoyment is frequently connected to the ability to publish personal knowledge and the later discussion and development of ideas and innovations. It is comparable to reading special interest articles and enjoying consuming new knowledge and acting on playful instincts.

One member of C1sf gave the following representative statement: “…I feel positive when I post an idea and other colleagues can give their input too. This creates a special ecosystem to reach a common goal. But it feels open”.

Another driver is simply looking up what others have posted. One member of C2mf talked about his “…desire to read what others have written. …for me this is an amusing toy”.
Another perspective was provided a participant of the same community, who found that “…the platform presents functions and content in an appealing way.”

There was no significant difference between C1sf and C2mf for content relating to this item.

**Intellectual stimulation and learning experience (M03-I6)**

Quantitative statements from members of both communities support the relevance of this item, with values of 2.75 (C1sf) and 3.22 (C2mf) and a mean of 3.07. The difference between C1sf and C2mf is significant at 0.47.

People who voluntarily participate in such communities want to learn new things outside of the scope of their normal work. They are interested in what members of other departments do and know. They see participation as a further development of their skills and find it intellectually stimulating to venture into foreign territory.

Thus a member of C2mf explained how he appreciated “…being confronted with different perspectives I’d never thought about. It’s very exciting”

Participants also appreciated high quality content such as videos, pictures and audio, which they expected as input from outside the community. This was expressed by a member of C2mf, who thought: “…that it is good to get information about mega-trends. It’s important for this content to be well-produced and stylish. People want text and content that are easy to consume.”

A member of C1sf supported this idea by confirming that “…I like watching interesting videos more than reading a long article. The different kinds of media really enrich this process.”

There was no significant difference between C1sf and C2mf for content relating to this item. However, the higher assessment values suggest it played a bigger role in C2mf. Members of sales and
marketing communities seem to understand the process as a learning experience and a chance to gain easy access to new information. The different assessment values will be discussed in a wider scope in section 5.2.

4.2.2 Extrinsic motivators

Extrinsic motivators are relevant but do not seem to be critical. This is reflected by a mean value for this category of 2.64. To improve the explanatory power of the following mean values Appendix I contains additional information such as the standard deviation of all items in total.

Classical motivators relating to rewards and career opportunities play an even more subdued role compared with motivators related to the process setup, such as software features and efficacy of cooperation supported by social media (M12 and M13). The middle ground is occupied by items such as M10 (“Clear objectives”) and M11 (“Active participation by maintainers”), which both relate to leadership. It is conspicuous that members of C1sf (service functions) seem to expect stronger leadership than members of C2mf (marketing and sales). It is also interesting that M08 (“Competition”) scored below 2.5 in both communities and can hence be ignored.

Table 27: Extrinsic motivational factors

<table>
<thead>
<tr>
<th>Number</th>
<th>Ranking</th>
<th>Extrinsic motivational factor</th>
<th>n=26 (total)</th>
<th>n=8 (C1sf)</th>
<th>n=18 (C2mf)</th>
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<tbody>
<tr>
<td>M13</td>
<td>E1</td>
<td>Sense of efficacy</td>
<td>3.27</td>
<td>3.5</td>
<td>3.16</td>
</tr>
<tr>
<td>M12</td>
<td>E2</td>
<td>Good usability of system and platform features</td>
<td>2.85</td>
<td>3.13</td>
<td>2.72</td>
</tr>
<tr>
<td>M09</td>
<td>E3</td>
<td>New job opportunities and firm recognition</td>
<td>2.62</td>
<td>2.63</td>
<td>2.61</td>
</tr>
<tr>
<td>M07</td>
<td>E4</td>
<td>Monetary compensation</td>
<td>2.51</td>
<td>2.88</td>
<td>2.36</td>
</tr>
<tr>
<td>M11</td>
<td>E5</td>
<td>Active participation by maintainers</td>
<td>2.42</td>
<td>2.5</td>
<td>2.38</td>
</tr>
<tr>
<td>M10</td>
<td>E6</td>
<td>Interesting objectives combined with clarity of purpose and concept</td>
<td>2.38</td>
<td>2.75</td>
<td>2.22</td>
</tr>
<tr>
<td>M08</td>
<td>E7</td>
<td>Competition</td>
<td>2.31</td>
<td>2.38</td>
<td>2.28</td>
</tr>
<tr>
<td>Mean:</td>
<td></td>
<td></td>
<td><strong>2.64</strong></td>
<td></td>
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</tr>
</tbody>
</table>
**Sense of efficacy (M13-E1)**

Quantitative statements from members of both communities support the strong relevance of this item, with values of 3.5 (C1sf) and 3.16 (C2mf) and a mean of 3.27. The difference between C1sf and C2mf is significant at 0.33.

As already seen for M12 (“Good usability of software”), social media platforms provide strong support for cooperation during the ideation process. Due to rapid response and intelligent information features, participants perceive cooperation with other participants as a flow experience and enjoy participating regardless of time and place.

In a presentation on community output, the participants of C1sf remarked “…you can work on the same task in different locations, at different times.”

Another member of C1sf praised the “…speed of the platform. Once I have an engaging thought, I can just post it and receive a rapid response.”

And a member of C2mf was confident that “…if you have an idea but there are some sticking points, there will definitely be somebody who knows how to help and solve the problem.”

There was no significant difference between C1sf and C2mf for content relating to this item. The different assessment values suggest that this method of interacting inspires members of service communities more than members of a sales and marketing background.

**Good usability of system and platform features (M12-E2)**

The quantitative statements from members of both communities support the strong relevance of this item, with values of 3.13 (C1sf) and 2.72 (C2mf) and a mean of 2.85. The difference between C1sf and C2mf is significant at 0.4.
Members of virtual innovation communities love to co-create ideas and conceptual thoughts in a rapid and uncomplicated way. Therefore, the supporting system must be as intuitive as possible. Participants act voluntarily and expect to work with easy-to-use features, spending little to no time learning how to use the software. Failure to meet these expectations can lead to serious motivational barriers (see B04 in section 4.3). But if these expectations are exceeded, the software can also be a helpful motivator, because consuming these features also provides fun (see M01 above).

In a presentation about community output, the participants of C1sf remarked “...the use of cool features meet expectations about modern companies and instil a feel-good effect.”

A member of C2mf remembered how they were “…really surprised at how well this worked. The technology was used in a very clever way.”

Another member of the same community made it clear that “…this technology fosters cooperation in an amazing way. You can almost see it as a matter of pride.”

Finally, a member of C2mf stated that “…the design of the platform is fresh and modern and is a good contrast to my other standard environment.”

There was no significant difference between C1sf and C2mf for content relating to this item. The difference in assessment values suggests that usability plays a more important role for members of service communities. This might be due to the working environments of members of service communities, which are characterised by a culture of high process efficiency. The different assessment values will be discussed in a wider scope in section 5.2.
New job opportunities (M09-E3)

Quantitative statements from members of both communities support the relevance of this item, with values of 2.63 (C1sf) and 2.61 (C2mf) and a mean of 2.62. The difference between C1sf and C2mf is 0.01.

To ensure consistency, a reciprocal control variable was integrated as barrier B17 (“Lack of job opportunities”). Values of 2.63 (C1sf) and 1.94 (C2mf) and a mean of 2.15 confirm the particular attitudes of each community and show that job opportunities (or their absence) are of limited relevance.

Members of such communities are often interested in other business areas and business disciplines than their core activities (see M03 above.) In this context, participation is also seen as a chance to put oneself forward for other or better jobs. Activities related to the implementation of the posted and discussed ideas are particularly relevant.

This is corroborated by a statement by a C2mf member, who said “…I would really appreciate it if there were a commitment that if my idea was chosen I would be able to help make it a reality.”

Another participant thought that by participating in a community “…I can make a positive transition to a different business context.”

A harsher assessment was given by a member of C1sf, who explained: “…I expected there would be problems if I didn’t join these innovation communities, because others might think I’m not interested in innovation or improving our company.”

There was no significant difference between C1sf and C2mf for content relating to this item.
Monetary and virtual compensation (M07-E4)

Quantitative statements from members of both communities support the limited relevance of this item, with values of 2.88 (C1sf) and 2.36 (C2mf) and a mean of 2.51. The difference between C1sf and C2mf is significant at 0.51.

To ensure consistency, a reciprocal control variable was integrated as barrier B16 (“Lack of monetary rewards”). Values of 2.63 (C1sf) and 2.0 (C2mf) and a mean of 2.23 confirm the particular attitudes of each community and show that rewards (or their absence) are of limited relevance.

Additional monetary compensation or classical rewards seem to be a hygiene factor rather than a motivator. It seems clear that rewards can have a counterproductive effect due to the problem of assessing the different value creation inputs within a social community. But once participants feel that the company’s benefit exceeds their personal benefit, it can have a negative effect.

This is corroborated by a statement from a C2mf member, who said “…I’d only expect additional monetary compensation if an innovation really took off or the company saved a lot of money with it. In any other case, recognition from management would be enough.”

Another member of the same community was completely against rewards, even virtual ones such as smileys. He said “… I wouldn’t support smileys. That’s just introduces another form of hierarchy. The same goes for ‘likes’ in the sense of a reward. ‘Likes’ should be a symbol of agreement, not part of a reward.”

On the other hand, a member of C1sf said “… a reward could be positive. But you’d have to look at it in detail. It could be an expression of appreciation and a further step in an employee’s professional development.”
There was no significant difference between C1sf and C2mf for content relating to this item. This issue seems to be more important to members of service functions. The different assessment values will be discussed in a wider scope in section 5.2.

**Active maintainers and clear objectives (M11-E5 & M10-E6)**

M10 and M11 both relate to leadership and how moderators and maintainers act towards the community. Quantitative statements from members of both communities support the limited relevance of these items, with values of 2.75 (C1sf), 2.22 (C2mf) and a mean of 2.38 for M10 and 2.5 (C1sf), 2.38 (C2mf) and a mean of 2.42. The difference between C1sf and C2mf was significant at 0.52 for M10 but insignificant at 0.12 for M11.

Clear objectives for the community and unobtrusive moderation acting seem essential to successfully establish an innovation community.

Members of C1sf in particular seemed to expect a certain amount of leadership. One member made it clear, saying “…I like well-defined questions (innovation challenges). They match my structured way of thinking, which I prefer.” Another member of the same community said “…I prefer narrower questions, because then the moderator has better opportunities to intervene.”

A member of C2mf went even further, pointing out that “…a more detailed question brings in experts, which can really make a difference, because then you have, say, the five best experts who can find a solution instead of a lot of people discussing surface-level issues.”

Another member of C2mf found it important to “…have clear goals, along with a comprehensive statement of how the company will benefit from the community’s efforts.”
Moderators are expected to exist but only act once the community goes astray or participants behave unexpectedly.

This is corroborated by a statement of a member of C2mf, who said “... if somebody posts unqualified content to bring the community back on track, he (the moderator) should intervene and compliment the participants for their helpful input.”

Another member of the same community reported that, for him, “… the presence of a moderator suggests someone is interested in my ideas.”

There was no significant difference between C1sf and C2mf for content relating to these items. This issue seems to be more important to members of service functions. The different assessment values will be discussed in a wider scope in section 5.2.

### 4.2.3 Social extrinsic motivators

Social extrinsic motivators are definitely relevant. This is reflected by a mean value for this category of 2.89. Only M21 (“Individual commitment and accountability”) scored lower than 2.5 and is therefore discarded. M19 was used as a control variable and thus will also not be considered further. To improve the explanatory power of the following mean values Appendix I contains additional information such as the standard deviation of all items in total.

#### Table 28: Social extrinsic motivational factors

<table>
<thead>
<tr>
<th>No.</th>
<th>Ranking</th>
<th>Social extrinsic motivational factor</th>
<th>n=26 (total)</th>
<th>n=8 (C1sf)</th>
<th>n=18 (C2mf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M18</td>
<td>SE1</td>
<td>Exposure to new viewpoints and synergy</td>
<td>3.58</td>
<td>3.5</td>
<td>3.61</td>
</tr>
<tr>
<td>M17</td>
<td>SE2</td>
<td>Open and constructive atmosphere</td>
<td>3.42</td>
<td>3.38</td>
<td>3.44</td>
</tr>
<tr>
<td>M16</td>
<td>SE3</td>
<td>Feedback</td>
<td>3.15</td>
<td>3</td>
<td>3.22</td>
</tr>
<tr>
<td>M20</td>
<td>SE4</td>
<td>Sense of cooperation and reciprocity</td>
<td>2.65</td>
<td>3.13</td>
<td>2.44</td>
</tr>
<tr>
<td>M14</td>
<td>SE5</td>
<td>Affiliation to a particular community</td>
<td>2.62</td>
<td>3.13</td>
<td>2.39</td>
</tr>
<tr>
<td>M15</td>
<td>SE6</td>
<td>Reputation</td>
<td>2.46</td>
<td>2.5</td>
<td>2.44</td>
</tr>
<tr>
<td>M21</td>
<td>SE7</td>
<td>Individual commitment and accountability</td>
<td>2.32</td>
<td>2.38</td>
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<tr>
<td>Mean:</td>
<td></td>
<td></td>
<td>2.89</td>
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</tr>
</tbody>
</table>
Open and constructive atmosphere and new viewpoints (M18-SE1 & M17-SE2)

M17 and M18 both deal with the importance of how openly members of such communities can interact. Quantitative statements from members of both communities support the strong relevance of these items, with values of 3.38 (C1sf), 3.44 (C2mf) and a mean of 3.42 for M17 and values of 3.5 (C1sf), 3.61 (C2mf) and a mean of 3.58 for M18. The difference between C1sf and C2mf is not significant for either.

Members of innovation communities are aware that their input is seen by a wide audience and that the process of interaction is an open and sometimes combative expert discussion about innovation directions or even very small details of a new product or service. They desire a supportive atmosphere where everybody is able to communicate freely and enlarge their personal knowledge network.

This is corroborated in a statement from C1sf about lessons learned, which stated “…the collective discussion on the platform establishes new networks.”

Another member of C1sf said: “...I like the idea that everybody (including higher management) discusses things openly. I support organisations building a sense of a corporate feeling across hierarchical levels.”

A member of C2mf claimed “…discussion must be open and I would appreciate it if our culture supported that. I see this as a cultural issue. For this reason I would forbid anonymous participation. A statement associated with a name and a role is more informative than just a statement.”

And another member reported “…I enjoyed it a lot. I’d never had an opportunity to interact with colleagues I hadn’t met before.”
Another participant from the same community stated “...it was amazing to see this agile discussion with added comments, notes and ideas. I appreciated the very open and novel presentation of the whole thing. It was a completely uninhibited and lively discussion.”

There was no significant difference between C1sf and C2mf for content related to these items.

**Feedback (M16-SE3)**

Quantitative statements from members of both communities support the relevance of this item, with values of 3.0 (C1sf) and 3.22 (C2mf) and a mean of 3.15. The difference between C1sf and C2mf is 0.22.

The receipt of high quality and well-founded feedback is a major driver for experts to participate in community at a senior professional level. Because they can rely on strong expertise, they are challenged by other experts and thus able to improve their own skills.

This was expressed by a member of C2mf, who reported “…I think it was an advantage to have my ideas challenged by others. Once you’ve reached a certain age you appreciate you aren’t alone in this word and that there are others who also know lots.”

Another member supported this by making clear that “…feedback on my own ideas is an important incentive for continuing.”

A member of C1sf stated that he liked the feeling: “... that I’ll get a response to what I post. Even if it’s not immediate, I know that my thoughts appeal to others and I’ll get feedback – constructive feedback about things I haven’t thought about.”

There was no significant difference between C1sf and C2mf for content related to these items.
Affiliation to a certain community and sense of cooperation and reciprocity (M20-SE4 + M14-SE5)

M14 and M20 both deal with the sense of unity and togetherness within the community. Quantitative statements from members of both communities support the relevance of both items, which differ in similar ways. Members of C1sf seem to need desire greater affiliation than members of C2mf. This is clear from values of 3.13 (C1sf), 2.39 (C2mf) and a mean of 2.62 for M14 and values of 3.125 (C1sf), 2.44 (C2mf) and a mean of 2.65 for M20. The difference between C1sf and C2mf was significant for both M14 and M20, at 0.73 and 0.68, respectively.

Belonging to a particular group of people and developing a drive and common identity towards a shared goal is very desirable for some participants.

A member of C2mf expressed his feelings by saying "...it's nice to see people working together and developing ideas which come to be successful in the market and to experience an awesome feeling of cooperation and that everybody has contributed their own piece of work. It makes the whole community happy".

And a member of C1sf reported that it was positive “...that we had a corporate feeling. It's inspiring and fires your imagination. You've been part of something and you were able to co-create something for the company. These were the highlights for me and I liked it very much.”

There was no significant difference between C1sf and C2mf for content related to these items. The quantitative values suggest that this issue seems to be more important to members of service functions. The different assessment values will be discussed in a wider scope in section 5.2.
Reputation and mutual appreciation (M15-SE6)

Quantitative statements from members of both communities support the limited relevance of this item, with values of 2.5 (C1sf) and 2.44 (C2mf) and a mean of 2.46. The difference between C1sf and C2mf is 0.055.

Members of innovation communities are aware that their input is seen by a responsive audience. By demonstrating creativity and special knowledge, they have the opportunity to improve their reputation within the community and thus within the whole company.

A member of C2mf said “...it’s a chance to present yourself on such a platform. When others comment positively on your ideas it means that they have taken notice of you and appreciate your contribution.”

And a member of C1sf suggested “…it would make sense to present some of the community’s ideas in our corporate newsletter, along with the names of the inventors.”

This was supported by another member, who stated “…it provides respect to people who have brought their ideas to a successful conclusion. This sends positive signals and motivates people to stay on board”

There was no significant difference between C1sf and C2mf for content related to this item.

4.3 Barriers

This subsection examines all relevant barriers based on the following categories: barriers related to work factors, barriers related to cultural factors and barriers related to relationship factors. For the derivation of this structure, see section 2.
4.3.1 Barriers related to work factors

Motivational barriers related to work factors play an important role. This is shown by the mean value for this category of 2.86.

Only B09 (“Difficulties with individual commitment and accountability”) scored below 2.5 and is hence ignored. In addition, B16 (“Lack of monetary rewards”) and B17 (“Lack of job opportunities”) were used as control variables for M07 (“Monetary and virtual rewards”) and M09 (“New job opportunities”), respectively. These have already been discussed presented in subsection 4.2.2 and will not be covered below. To improve the explanatory power of the following mean values Appendix I contains additional information such as the standard deviation of all items in total.

Table 29: Motivational barriers related to work factors

<table>
<thead>
<tr>
<th>Number</th>
<th>Ranking</th>
<th>Motivational barrier</th>
<th>n=26 (total)</th>
<th>n=8 (C1sf)</th>
<th>n=18 (C2mf)</th>
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</thead>
<tbody>
<tr>
<td>B06</td>
<td>W1</td>
<td>Lack of time, time pressure</td>
<td>3.61</td>
<td>3.75</td>
<td>3.56</td>
</tr>
<tr>
<td>B11</td>
<td>W2</td>
<td>Communication problems</td>
<td>3.34</td>
<td>3.86</td>
<td>3.11</td>
</tr>
<tr>
<td>B04</td>
<td>W3</td>
<td>Weak usability of IT platform,</td>
<td>3.30</td>
<td>3.25</td>
<td>3.33</td>
</tr>
<tr>
<td>B12</td>
<td>W4</td>
<td>Unclear, unrealistic goals</td>
<td>3.27</td>
<td>3.375</td>
<td>3.22</td>
</tr>
<tr>
<td>B03</td>
<td>W5</td>
<td>Lack of management support within innovation management</td>
<td>3.19</td>
<td>3.13</td>
<td>3.22</td>
</tr>
<tr>
<td>B05</td>
<td>W6</td>
<td>Lack of tools and processes</td>
<td>2.96</td>
<td>3.0</td>
<td>2.94</td>
</tr>
<tr>
<td>B07</td>
<td>W7</td>
<td>Lack of financial resources</td>
<td>2.77</td>
<td>2.5</td>
<td>2.89</td>
</tr>
<tr>
<td>B01</td>
<td>W8</td>
<td>Lack of competent personnel and expert knowledge</td>
<td>2.63</td>
<td>2.63</td>
<td>2.64</td>
</tr>
<tr>
<td>B02</td>
<td>W9</td>
<td>Lack of management knowledge</td>
<td>2.6</td>
<td>2.63</td>
<td>2.58</td>
</tr>
<tr>
<td>B28</td>
<td>W10</td>
<td>Information overload</td>
<td>2.58</td>
<td>3.0</td>
<td>2.39</td>
</tr>
<tr>
<td>B08</td>
<td>W11</td>
<td>Difficulties in aligning partners/participants</td>
<td>2.5</td>
<td>3.13</td>
<td>2.22</td>
</tr>
<tr>
<td>B16</td>
<td>W12</td>
<td>Lack of monetary rewards</td>
<td>2.23</td>
<td>2.63</td>
<td>2.05</td>
</tr>
<tr>
<td>B17</td>
<td>W13</td>
<td>Lack of job opportunities</td>
<td>2.15</td>
<td>2.63</td>
<td>1.94</td>
</tr>
<tr>
<td>Mean:</td>
<td></td>
<td></td>
<td><strong>2.86</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Lack of time, time pressure (B06-W1)

Quantitative statements from members of both communities support the high relevance of B06, with values of 3.75 (C1sf) and 3.56 (C2mf) and a mean of 3.61. The difference between C1sf and C2mf is 0.19.

Combining daily processes and routines with participation in an innovation community seems very difficult. Major time pressure from routine tasks and project work prevents people from being creative in a totally different virtual innovation environment. Participants lamented the lack of dedicated timeslots for participation. Participation increased significantly on Fridays, when day-to-day business overloads creative work less than on Monday to Thursday.

This was expressed in many statements from both communities. A member of C2mf confirmed “… it is true about the Fridays. I planned my participation for Fridays. It wasn't an ad hoc thing. Tasks other than daily business have to be planned or they get dropped.”

Another member reported “… my week is completely packed with stuff for 50 hours and more. And that’s just actual work. So I don’t have any time to more than glance at anything else.”

A member of C1sf stated “…it’s a matter of time. It's like with Facebook. If you can’t keep up with it, you’re out. You won’t log in anymore.”

There was no significant difference between C1sf and C2mf for content related to this item.

Communication problems (B11-W2)

B11 deals with the quality of communication within the innovation process and especially with the transparency of decisions made during the different stages. Quantitative statements from members of both communities support the high relevance of B11, with values of 3.84 (C1sf) and 3.11 (C2mf) and a mean of 3.34. The difference between C1sf and C2mf is significant at 0.76.
Careful and sustainable communication is crucial to innovation management. Participants in innovation communities want clear and transparent information about how ideas become implemented products or services. Each stage in the process and the related stage-gate decisions must be very clear.

This is supported by a lessons learned presentation by C1sf which stated “...willingness to participate in future campaigns will suffer due to a lack of transparency and feedback surrounding the level of implementation of ideas.”

They criticised the competing role of other processes like continuous improvement and annual planning processes, which also demand ideas from participants.

With reference to an existing ideation platform, one member of C2mf reported “…this platform is a black box. You can’t follow other participants’ ideas… and it’s a problem that they (innovation management) aren’t transparent about their decisions. It has to be an open atmosphere and not a one-way channel.”

There was no significant difference between C1sf and C2mf for content related to this item. The different quantitative statements relate to a specific problem within C1sf. A lot of ideas which were provided in a continuous improvement campaign carried out half a year before became stuck somewhere in the process. The participants did not know what happened to their ideas. This has led to a disproportional demotivating perception of this barrier.

**Weak usability of IT platform (B04-W3)**

Quantitative statements from members of both communities support the high relevance of B04, with nearly identical values of 3.25 (C1sf) and 3.33 (C2mf). The difference between C1sf and C2mf is just 0.08.

As already shown for M12, the usability of the software platform plays a very decisive role. Members of virtual innovation communities
love to co-create ideas and conceptual thoughts in a rapid and uncomplicated way. Therefore, the supporting system must be as intuitive as possible. Participants act voluntarily and expect to work with easy-to-use features, spending little to no time learning how to use the software. Failure to meet these expectations and restrictions on easy access can lead to serious motivational barriers.

One member of C2mf reported: “...if the access method is too difficult, it hinders the process dramatically.”

Another added “…once you have an idea you should be able to act on it quickly and simply. That’s because you won’t use the system daily. If it’s not intuitive, I’m less likely to use it.”

Another member of the same community stated “…if it doesn’t work after two minutes than I won’t use it anymore. I don’t want to read a twenty page manual to be able to use the software.”

A member of C1sf explained “…I had an idea but the software platform was out of order. I didn’t try it again.”

There was no significant difference between C1sf and C2mf for content related to this item.

**Unclear or unrealistic goals (B012-W4)**

Quantitative statements from members of both communities support the high relevance of B12, with values of 3.375 (C1sf) and 3.22 (C2mf) and a mean of 3.27. The difference between C1sf and C2mf is 0.15.

B12 can be seen as the negative counterpart of M12 (“Clear objectives and active participation of maintainers”).

Clear and realistic goals are necessary to successfully establish an innovation community. Conversely, unclear or unrealistic goals are barriers to innovation processes. Too much effort is required to align the group (see also B08). As participants act voluntarily and under
time pressure, they expect the best possible participation architecture, including clear definitions of innovation goals linked to the company’s innovation strategy.

Members of C1sf in particular expected clearly defined innovation challenges. One member stated “…I like well-defined innovation challenges. They complement my structured way of thinking, which I prefer.”

A member of C2mf went further, pointing out that “…a more detailed question brings in experts and that can make a difference because you then have probably the five best experts who can find a solution instead of a lot of people discussing the issues just on the surface.”

Another member of C2mf found it important to “…have clear goals, along with a comprehensive statement of how the company will benefit from the community’s efforts.”

There was no significant difference between C1sf and C2mf for content related to this item.

**Lack of management support (B03-W5)**

B03 covers participants’ perception of management support within the innovation process. Quantitative statements from members of both communities support the high relevance of B03, with values of 3.13 (C1sf) and 3.22 (C2mf) and a mean of 3.19. The difference between C1sf and C2mf is 0.09.

As participants in such communities act voluntarily, they want to be supported by management in many different ways, from the maintenance of a high-end software platform to the placement of high-quality content and active support in realising ideas through simple funding structures. Once participants feel managers are underestimating their content or handling things unprofessionally, this behaviour can have a serious negative impact upon morale.
This was reflected by a member of C2mf, who said “…I don’t want to appear disrespectful, but I don’t think the decision makers make content-based arguments. It’s more a process-oriented approach, which isn’t helpful.”

A member of C1sf stated that “…I submitted a set of ideas and always received the same answer to justify the rejection. They should at least provide individual responses there.”

There was no significant difference between C1sf and C2mf for content related to this item.

**Weak tool support (B05-W6)**

B05 involves tooling for the innovation process. Quantitative statements from members of both communities support the relevance of this item, with values of 3.0 (C1sf) and 2.94 (C2mf) and a mean of 2.96. The difference between C1sf and C2mf is 0.06.

Supporting tools and the ability to influence the tooling via new requirements seems important for participants. Members want an integrated tool setup throughout all stages of the process.

This was shown in a lessons learned presentation from C1sf, which stated “…the tool should be customisable to meet participants’ unique requirements. We would like open source tools that can be tailored to our preferences at any time. To keep us interested and increase participation, we expect modern tools such as smartphone apps.” There was no significant difference between C1sf and C2mf for content related to this item.
Lack of financial resources (B07-W07)

Quantitative statements from members of both communities support the relevance of B07, with values of 2.5 (C1sf) and 2.89 (C2mf) and a mean of 2.77. The difference between C1sf and C2mf is 0.39.

Due to regulatory guidelines and substantial investments in legacy IT systems, most banks have little or no financial resources left for innovation. This is exacerbated by inflexible project planning processes based on yearly iterations. Most positions in the annual project portfolio are thus labelled as “essential”. People see this as an insurmountable barrier to realising new and creative ideas. People have tried to suggest ideas, only to be refused with an argument based on financial restrictions.

This was demonstrated by a member of C2mf, who said “…I submitted a lot of ideas. They were highly appreciated and then refused (due to a lack of financial resources).”

Another explained “…especially over the past five years, annual plans were consumed by essential projects and investments in regulatory matters.”

A member of C1sf said “…there is still enough money to invest, but we don’t have enough IT experts to complete a project. A lot of them work on many parallel projects.”

There was a small difference between C1sf and C2mf for content related to this item. Members of service departments (C1sf) saw a shortage in manpower whereas members of sales and marketing departments (C2mf) saw a lack of financial resources. The perception of financial shortage influenced members of C2mf more strongly than members of C1sf.

Lack of competent personnel and expert knowledge (B01-W08)

B01 relates to sufficient knowledge within the community and whether a lack of competent personal would influence the community
process negatively. Quantitative statements from members of both communities support the relevance of B01, with nearly identical values of 2.63.

Both communities think this has a certain relevance but perceive the dedicated environment as generally positive in this context. As already shown in items such as M02, M03, M09, M15, M16 and M18, participants in internal innovation communities expect high-quality, in-depth discussion and learning within their community. If this environment is not provided, the community process will be disturbed due to an interrupted flow of knowledge. Participants expect professional input and reject off-topic comments.

One member of C2mf explained “…some participants are overstrained by the expert topics within the community, which I think is sad.”

Another member reported “… I had a negative experience because the level of innovation was limited. Some people suggested ideas which I didn’t think were new or really innovative. It seemed like they were trying to relaunch ideas which had failed in the past.”

A member of C1sf said “… it is interesting what people write there. If I take this content seriously but others don’t then I won’t participate anymore.”

There was no significant difference between C1sf and C2mf for content related to this item.

**Lack of management knowledge (B02-W9)**

B02 deals with participants’ perception of management’s knowledge about innovation processes. Quantitative statements from members of both communities support the relevance of B02 with values of 2.63 (C1sf) and 2.58 (C2mf) and a mean of 2.6. The difference between C1sf and C2mf is 0.04.
As participants of such communities act voluntarily, they want to be supported by the management in many different ways. Once participants feel management are handling things unprofessionally, this behaviour becomes a serious demotivator.

This was reflected by a member of C2mf, who said “…we have many ways to improve our process organisation. This means clearer cooperation structures, working in knowledge pools instead of teams and improving our working environment.”

Another member explained “…if we want more success it’s essential to enforce innovation by increasing the number of people working on these issues exclusively or at least with a set time budget. It’s not enough for management to writes things on an innovation agenda.”

There was no significant difference between C1sf and C2mf for content related to this item.

**Information overload (B28-W10)**

Quantitative statements from members of both communities, but particularly C1sf, support the relevance of B28, with values of 3.0 (C1sf) and 2.39 (C2mf) and a mean of 2.58. The difference between C1sf and C2mf is significant at 0.61.

The knowledge input of members of innovation communities can take on quite different forms, from describing trends to posting inspiring videos about innovations to engaging in expert dialogues between community members. Following different ideation campaigns with a lot of different ideas can be a complex exercise and lead to information overload.

One member of C2mf explained “…there’s sometimes so much information on the screen that you get lost. You can’t really distinguish content from software features and it appears overloaded.”
A member of C1sf reported “…you get information overload and see who is prepared to push through it. It isn’t effective or efficient. I would rather prefer selective information management.”

There was no significant difference between C1sf and C2mf for content related to this item. However, members of C1sf seemed more sensitive to this issue, as seen in their higher assessment values. Members of marketing and sales functions seem to handle information differently. The different assessment values will be discussed in a wider scope in section 5.3.

**Difficulties in aligning participants (B08-W11)**

Quantitative statements show that B08 was only relevant for C1sf, with values of 3.13 (C1sf) and 2.2 (C2mf) and a mean of 2.5. The difference between C1sf and C2mf is significant at 0.90.

This item was perceived as differently relevant by each community due to their different designs and organisational backgrounds. C1sf had more leeway to define innovation directions than C2mf, who had to innovate based on a specific innovation challenge. This resulted in different perceptions of community alignment processes. C1sf spent a lot more time discussing which direction the ideation process should head in.

One member of C2mf reported “…I saw a lot of ideas which I wouldn’t put in this context. They were good but didn’t meet the challenge. A lot of participants faded away. “

Most members of C2mf argued similarly to the member who said “…the more precisely an innovation challenge is formulated, the better the creative outcome.”

Another member supported this by explaining “…I like well-defined innovation challenges. They complement my structured way of thinking, which I prefer.”
There was no significant difference between C1sf and C2mf for content related to this item. Like M10 and M11, the members of C1sf seemed to expect a higher level of control and leadership. They required clear goals and saw the very open challenge as a confusing problem rather than an opportunity. They did not want to invest time and energy in discussing innovation directions and preferred to contribute to a well-formulated innovation task and easy-to-handle participation architecture.

4.3.2 Barriers related to cultural factors
Motivational barriers related to cultural factors appear due to unsupportive organisational behaviour. This class of barriers was definitely relevant to participants, as reflected by the mean value for this category of 2.83. Only B09 (“Difficulties integrating partners/participants”) and B30 (“Resistance to technology”) received scores below 2.5 and are therefore ignored. To improve the explanatory power of the following mean values Appendix I contains additional information such as the standard deviation of all items in total.

Table 30: Motivational barriers related to cultural factors

<table>
<thead>
<tr>
<th>No.</th>
<th>Ranking</th>
<th>Motivational barrier</th>
<th>(n=26) (total)</th>
<th>(n=8) (C1sf)</th>
<th>(n=18) (C2mf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B18</td>
<td>C1</td>
<td>High resistance to change</td>
<td>3.54</td>
<td>3.88</td>
<td>3.39</td>
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<tr>
<td>B25</td>
<td>C2</td>
<td>Bureaucracy and administrative burdens</td>
<td>3.42</td>
<td>3.25</td>
<td>3.5</td>
</tr>
<tr>
<td>B26</td>
<td>C3</td>
<td>Costs and risk of innovation</td>
<td>3.30</td>
<td>3.38</td>
<td>3.27</td>
</tr>
<tr>
<td>B13</td>
<td>C4</td>
<td>Early opponents</td>
<td>3.15</td>
<td>3.13</td>
<td>3.16</td>
</tr>
<tr>
<td>B10</td>
<td>C5</td>
<td>Lack of commitment from participants</td>
<td>3.07</td>
<td>3.5</td>
<td>2.89</td>
</tr>
<tr>
<td>B14</td>
<td>C6</td>
<td>Lack of appreciation</td>
<td>2.96</td>
<td>3.25</td>
<td>2.83</td>
</tr>
<tr>
<td>B27=B19</td>
<td>C7</td>
<td>Lack of the capability to corporate with others and to share knowledge</td>
<td>2.58</td>
<td>3</td>
<td>2.38</td>
</tr>
<tr>
<td>B09</td>
<td>C8</td>
<td>Difficulties integrating participants</td>
<td>1.92</td>
<td>2.38</td>
<td>1.72</td>
</tr>
<tr>
<td>B30</td>
<td>C9</td>
<td>Resistance to technology</td>
<td>1.82</td>
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<td>Mean:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.83</td>
</tr>
</tbody>
</table>
High resistance to change (B18-C1)

Quantitative statements from members of both communities support the strong relevance of B12 with values of 3.875 (C1sf) and 3.38 (C2mf) and a mean of 3.54. The difference between C1sf and C2mf is significant at 0.49.

B12 represents participants’ perceptions of how well or badly the organisational environment embraced change. As innovation can be understood as an approach to change, this item encompasses counterproductive behaviour for an organisation’s level of innovation.

A member of C2mf explained “…our processes are highly optimised but not revolutionary. We have difficulties dropping things we like and we are used to. It’s hard for us to step back and adopt a more objective position and choose new or greenfield approaches. There is a mentality of avoiding risk.”

Another member of C2mf added “…it’s because we have such a sustainable business model. There was no need for rapid changes in the past and so we’re not used to reacting immediately and we’re not trendsetters.”

A member of C1sf made a further point by stating “…there are always barriers to achieving results. Our personnel aren’t ready for change.”

Another member said “… there are a lot of people who have been with the company for 20 to 30 years. It’s very hard for them to change because of their conservative mindset.”

There was no significant difference between C1sf and C2mf for content related to this item. For members of C1sf it seems to be a more important issue. The different assessment values will be discussed in a wider scope in section 5.3.
**Bureaucracy and administrative burdens (B25-C2)**

Quantitative statements from members of both communities support the strong relevance of B25 with values of 3.25 (C1sf) and 3.5 (C2mf) and a mean of 3.42. The difference between C1sf and C2mf is 0.25.

Administrative barriers are a characteristic of an organisation’s resistance to change. Rigid and bureaucratic procedures can seriously hinder innovative initiatives. Most participants had already had negative experiences trying to plan and set up projects to implement innovative ideas.

They especially criticised the so-called “demand management process” which is implement to bring ideas and formulated demands to resolution by combining them with projects as part of combined project portfolio management.

One member of C2mf stated “…it needs a lot of extra sessions with IT architects, IT security, enterprise architects and budget owners to add a project to our portfolio.”

Another explained “… we start at the beginning and the idea is great and we’re already celebrating. But then you have the first meetings with people of who you think will support you like IT, purchasing, sales and project portfolio management. And then you go from 100 to 0 in two seconds. They throw up so many difficulties and barriers that you come to the conclusion that innovation is a real chore.”

Another participant explained “… we are like a well-tested motor which runs and runs. But once you want to change something it’s difficult. We want change but we are met with extreme antagonism with is very challenging to overcome.”

A member of C1sf reported that “…the staff has a very strong desire to innovate but they can’t due to bureaucratic hurdles. Our management wants innovation but they don’t deliver.”
There was no significant difference between C1sf and C2mf for content related to this item.

**Costs of innovation and risk culture (B26-C3)**

Quantitative statements from members of both communities support the strong relevance of B26 with values of 3.38 (C1sf) and 3.27 (C2mf) and a mean of 3.30. The difference between C1sf and C2mf is 0.1.

Implementing innovative ideas always carries a risk of failing and having to start again. Therefore, a culture of risk-taking is indispensable, where entrepreneurial spirit will not be punished if things develop differently than expected.

Participants in both communities perceived this culture as underdeveloped.

This was expanded on in a statement by a member of C2mf: “…it’s a question of handling mistakes. We dwell on failure instead of looking forward to success. Companies like Google and Amazon prefer to try things out even if they’re not fully mature. They use pilot customers to test new service and try to get their feedback. We aren’t willing to try these things. We’re extremely perfectionist due to an old-fashioned understanding of innovation culture.”

Another member criticised “…before we invest in new ideas we have to thoroughly calculate the expected return on investment. But this is often very difficult. How can you calculate a new trend? You have to make assumptions about the future and these are often subject to painful discussions with our controllers.”

A member of C1sf noticed that “…only 10 to 15 percent of our project portfolio is assigned to innovation. The rest is given over to coping with regulation, legacy IT and previous decisions. There aren’t enough margins for innovation.”
There was no significant difference between C1sf and C2mf for content related to this item.

**Early opponents due to open access and transparency (B13-C4)**

Quantitative statements from members of both communities support the relevance of B13 with nearly identical values of 3.13 (C1sf) and 3.16 (C2mf). The difference between C1sf and C2mf is 0.04.

Due to high functional orientation, different departments claim parts of or even entire initiatives as part of their core business and responsibilities. This can lead to serious conflicts within the community and to early opponents who try to criticise or even stop ideas at very early stages by taking advantage of open and companywide access and transparency surrounding the development.

This is supported by the lessons learned report compiled by C1sf, which stated that “…due to an open discussion across different hierarchies there is a certain risk that ideas will be taken the wrong way and stopped due to conflicts of competence.”

A member of C2mf complained that “…as soon as I launch content belonging to another business unit, I’m met with not-invented-here syndrome. It puts you in a very tight corner facing competence claims and it’s not what you wanted.”

There was no significant difference between C1sf and C2mf for content related to this item.

**Lack of commitment from participants (B10-C5)**

Quantitative statements from members of both communities support the strong relevance of B10 with values of 3.5 (C1sf) and 2.89 (C2mf) and a mean of 3.0. The difference between C1sf and C2mf is significant at 0.61.
Unproductive behaviour or unqualified comments can destroy the open and constructive atmosphere of an innovation community. As seen in many of the motivators, the participants expected appreciation and high quality input from experts. They dislike a lack of commitment or counter-productive behaviour, when they expect moderators to intervene and bring things back on track by enforcing cultural and behavioural rules.

A member of C2mf reported “…it’s not very helpful if unqualified comments are made or unfair statements are published.”

A member of C1sf went even further by claiming “…as soon as unqualified comments or ungrounded critique appear, the moderator should delete them.”

There was no significant difference between C1sf and C2mf for content related to this item. However, members of C1sf seemed more sensitive to unqualified contributions, as seen in their higher assessment values. Similar to their higher expectations for goals and leadership behaviour, they expected corrective behaviour embodied by the moderator role. The different assessment values will be discussed in a wider scope in section 5.3.

**Lack of appreciation (B14-C6)**

B14 was differently relevant for each community, with values of 3.25 (C1sf) and 2.83 (C2mf). The difference between C1sf and C2mf is significant at 0.42.

As already shown for M15 (“Reputation”) and M16 (“Feedback”), participants in internal innovation communities value positive reactions from other participants. This also includes appreciation from other observers such as people who only read through the communities or representatives of management. If there are no visible tokens of esteem inside or outside the community, members start having doubts about their participation.
This was explained in a statement by a member of C2mf, who said “…if participants never sees their ideas pursued or receive appreciative feedback then one day they will abandon the platform.”

And a member of C1sf explained that “… I find it a serious turn-off if my idea is presented or developed by other people and I do not receive recognition for my input.”

There was no significant difference between C1sf and C2mf for content related to this item. However, members of C1sf seemed more sensitive to a lack of appreciation, as seen from their higher assessment values. Similar to their higher expectations of leadership behaviour, they expected a greater display of appreciation for their input. The different assessment values will be discussed in a wider scope in section 5.3.

**Lack of ability to cooperate (B19-C7, B27-C7)**

B19 and B27 both relate to how flexibly participants handle their participation and how this is perceived by others. These were definitely relevant for C1sf, as seen by the values of 3.0 (C1sf), 2.38 (C2mf) and mean of 2.58 for B19 and 3.0 (C1sf), 2.39 (C2mf) and mean of 2.57 for B27. The differences between C1sf and C2mf were significant in both cases, with values of 0.52 and 0.61 for B19 and B27, respectively.

Successfully cooperating in this kind of process setup requires different skills, including the intuitive usage of social media software, writing skills and structuring expert knowledge around the innovation challenge (see section 2).

Participants, particularly members of C1sf, perceived these as high requirements for participation which might alienate many people.

This is reflected in the lessons learned report from members of C1sf which explained “…due to the high mean age of potential participants, we assume many of them will have a defensive attitude
towards social media technology. This involves learning a new tool, and not all of our staff members have access to PC workstations.”

There was a slight difference between C1sf and C2mf for content related to this item. No members of C2mf mentioned this item in their interviews, and the assessment values of both communities differ significantly. The different assessment values will be discussed in a wider scope in section 5.3.

### 4.3.3 Barriers related to relationship factors

Motivational barriers related to the relationship factors appear due to unsupportive behaviour between individuals or a group of individuals. This class of barriers plays a less role, as seen from the mean score of 1.92 for this category. The items B20 (“Fear of misleading others”), B22 (“Saving face”) B23 (“Fear of criticism”), B34 (“Lack of support from the work council”) and B29 (“Lack of self-confidence”) all scored below 2.5 and are therefore ignored. To improve the explanatory power of the following mean values Appendix I contains additional information such as the standard deviation of all items in total.

#### Table 31: Motivational barriers related to relationship factors

<table>
<thead>
<tr>
<th>Number</th>
<th>Ranking</th>
<th>Motivational barrier</th>
<th>n=26 (total)</th>
<th>n=8 (C1sf)</th>
<th>n=18 (C2mf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B33</td>
<td>R1</td>
<td>In-team orientation and lack of inter-organisational corporation skills</td>
<td>2.62</td>
<td>2.5</td>
<td>2.67</td>
</tr>
<tr>
<td>B31</td>
<td>R2</td>
<td>Modesty</td>
<td>2.52</td>
<td>3</td>
<td>2.31</td>
</tr>
<tr>
<td>B32</td>
<td>R3</td>
<td>Power distance</td>
<td>2.44</td>
<td>2.86</td>
<td>2.25</td>
</tr>
<tr>
<td>B15</td>
<td>R4</td>
<td>Uncertainty about what can be published</td>
<td>2.38</td>
<td>2.75</td>
<td>2.22</td>
</tr>
<tr>
<td>B21</td>
<td>R5</td>
<td>Lack of trust and confidentiality</td>
<td>2.29</td>
<td>2.63</td>
<td>2.14</td>
</tr>
<tr>
<td>B24</td>
<td>R6</td>
<td>Lack of cultural and behavioural rules</td>
<td>2.29</td>
<td>2.75</td>
<td>2.08</td>
</tr>
<tr>
<td>B34</td>
<td>R7</td>
<td>Lack of support of work council</td>
<td>2.12</td>
<td>2</td>
<td>2.17</td>
</tr>
<tr>
<td>B23</td>
<td>R8</td>
<td>Fear of criticism</td>
<td>1.87</td>
<td>1.88</td>
<td>1.86</td>
</tr>
<tr>
<td>B22</td>
<td>R9</td>
<td>Saving face</td>
<td>1.85</td>
<td>2.13</td>
<td>1.72</td>
</tr>
<tr>
<td>B20</td>
<td>R10</td>
<td>Fear of misleading others</td>
<td>1.79</td>
<td>2.38</td>
<td>1.53</td>
</tr>
<tr>
<td>B29</td>
<td>R11</td>
<td>Lack of self-confidence</td>
<td>1.67</td>
<td>2.13</td>
<td>1.47</td>
</tr>
<tr>
<td>Mean:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.92</td>
</tr>
</tbody>
</table>
In-team orientation (B33-R1)

B33 deals with the general capability of participants to cooperate across their organisational positions. Quantitative statements from members of both communities support the relevance of B33 with values of 2.5 (C1sf) and 2.67 (C2mf) and a mean of 2.62. The difference between C1sf and C2mf is 0.17.

The high specialisation of mature organisations leads to a high degree of functional orientation. Members of such organisational units forget how to cooperate outside their specialist areas, because they are driven by highly dedicated team objectives.

This was explained by a member of C2mf, who stated “... we operate in functional silos. Everyone pursues their own goals. This naturally leads to a loss of the big picture.”

A member of C1sf reported “…due to our high specialisation we only discuss our core topics. I don’t know what’s going on in other departments. I have little or no contact to other teams outside of my professional domain.”

There was no significant difference between C1sf and C2mf for content related to this item.

Modesty of participants and power distance (B31-R2 & B32-R3)

B31 and B32 both relate to how participants perform in a community, especially one with a hierarchy. These issues were seen as relevant, especially by members of C2mf. This was seen in comparable scores for the two items, from ~2.85 (C1sf) to ~2.3 (C1mf) and an average of ~2.48. The differences between C1sf and C2mf were both significant, at 0.69 and 0.625 for B31 and B32, respectively.

Modesty, especially in the sense of mutual thoughtfulness, can be counterproductive, especially when radical innovation is concerned. In order to treat other colleagues with care, people hold back ideas
which might cause discomfort for others, such as a loss of jobs or responsibilities.

This is exacerbated by the presence of a hierarchy. Due to the fear of personal consequences, people hold back inconvenient ideas or simply keep quiet.

This is supported by a statement from a member of C2mf member, who said “...if an idea could have negative consequences for sales staff such as temporarily lower turnovers or loss of customers or increased work then there’s a hidden barrier. We tend to shape the transition as gently as possible to prevent people being scared away.”

A member of C1sf supported this, saying “… innovations which could lead to job losses often go unmentioned because we don’t want to disappoint our colleagues.”

Discussing the presence of hierarchy, a member of C2mf said “...once higher management joins the discussion it will come to a halt. The discussion either stops or moves to higher management. You can easily see that in our forum.”

A member of C1sf reported “… I personally doubt that a (democratic) discussion with higher management is possible. There are different expectations based on people’s hierarchical position within our organisation.”

There was no significant difference between C1sf and C2mf for content related to this item. The different assessment values will be discussed in a wider scope in section 5.3.

**Lack of trust and uncertainty of infringing upon rules (B15-R4 & B21-R5 & B24-R6)**

B15, B21 and B24 all relate to how participants trust each other’s participation, particularly when it comes to sharing knowledge and intellectual property. This is seen in comparable values for the three
items, at ~2.7 (C1sf), ~2.1 (C2mf) and a mean of ~2.3. The differences between C1sf and C2mf for all three items are significant.

Successful cooperation in this kind of process setup requires a high level of trust that participants’ output will be handled without any consequences for the personal reputation and standing of community members. Members of both communities fear negative consequences of their participation. The issue surrounding what information can be published plays a thorny role in an environment which is not used to offensive IP strategies and open information exchange.

This is reflected in the lessons learned document produced by C1sf, which explained that “…participation induces conflicts by potentially infringing upon data protection regulations, which are controlled by internal auditors, IT security and the workers’ council.”

Another member of the same community claimed that “…to encourage participation we need more detailed behavioural rules in advance to ensure against personal or racist comments or any other affront to our dignity.”

There was no significant difference between C1sf and C2mf for content related to this item. These issues seem to have been more important for members of C1sf. The different assessment values will be discussed in a wider scope in section 5.3.
4.4 Expected management behaviour

The inductive analytic research step described in section 3.4 (steps three and four) produced six different roles and their expected behaviours, which will now be described in detail in the context of community members’ perceptions.

4.4.1 The management promoter role

The participants felt that the top management behaviour displayed during the innovation management process did not live up to the company’s vision statement, which ascribes a great deal of importance to innovation. This was shown by interviewee statements such as “...they (the management) pretend to display a certain interest, but I doubt they fully support this (innovation).” A similar view was expressed in a different statement: “...for me it is important for executive management to provide specific incentives and to ask seriously about our ideas and opinions about future innovation.”

Participants wanted top management to be visible within the innovation community, as seen by the claim “...management must set a good example”. On the other hand, the top management was advised not to interfere in the community process by trying to dominate the direction of innovation, as reflected by the statement: “...there will be people who vote for ideas posted by senior staff members. They feel obliged to vote for their ideas. The same goes for criticism. People provide criticism more sparingly when their bosses are involved and don’t say everything they think”. In this context, the community recommends managers “...create a space free from hierarchy”.

Another issue is how management communicates within the innovation process. One participant declared: “...I expect to discuss innovation with top management and for them to know what’s going on within the community.” Another participant stated their position as: “...they must support this platform and provide a clear mission for us.”
They should participate and talk about the importance of it. People should feel that participation will be honoured and appreciated.”

Another issue is encapsulated by the following statement: “...it would be beneficial if successful ideas were displayed in a central location on campus. You should be able to see how people have contributed. Then you would feel good for being part of a great development. This is an important ego booster.”

This was supported by another participant, who stated: “...what I mainly expect is appreciation. It should be given transparently and of course only in cases where it is really earned. This provides a sense of pride, being part of an innovation.”

Another participant pointed out: “...it is not money that drives me. If I received the order and responsibility to lead the implementation of an idea, that would motivate much more. You definitely expect something in that direction.”

A further important factor was highlighted by a participant who explained that “…people are under a lot of pressure, so every work step is streamlined and measured...a major issue is the time restriction...” They also stated that “they should allocate time and allow participation... externally and during holidays or other kinds of absence...”

Allocating sufficient time to innovate within clear committed timeframes was a central requirement of both communities.

The following table collates these partly competing expectations.

**Table 32: Expected management promoter behaviour**

<table>
<thead>
<tr>
<th>Identified role</th>
<th>Expected behaviour for organisational implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management promoter</td>
<td>• Active involvement into the process</td>
</tr>
<tr>
<td></td>
<td>• Support for all other roles</td>
</tr>
<tr>
<td></td>
<td>• Visible role within the community</td>
</tr>
<tr>
<td></td>
<td>• Possibility of interaction</td>
</tr>
<tr>
<td></td>
<td>• Interest and knowledge for and about the innovation challenge</td>
</tr>
</tbody>
</table>
- Avoid hierarchical intervention into the community
- Allocate time and necessary resources
- Immediate elimination of barriers
- Enable access to the process from outside, during holidays and other periods of absence
- Clear communication within the process
- Appreciation of active participation
- Enable exposure of ideas and successful innovations on campus

4.4.2 The innovation manager role

To ensure the alignment of the innovation process with the company's innovation strategy, the innovation process should be kicked off by a management impulse, providing direction for the desired innovation activities. The process owner, identified by the innovation manager role, should offer innovation challenges as an open call for innovation (idea campaign).

This initial stimulation might help overcome teething troubles, as illustrated by the interviewees' diagnosis that “they (the employees) sometimes need longer, but once they get going, what they need is time. Then they're ready to participate and change things”.

In addition, well-formulated innovation challenges can help integrate thematically relevant participants and prevent people from getting lost in the information space and innovating on topics beyond the company's innovation strategy. The community definitely expected clear management backing for the innovation campaign and the underlying topic(s). This can be seen in the statement from a member who explained: “… in addition to the platform, it’s vital for there to be a clear management commitment to the campaign, showing that this is really important for our company. We need transparency about how the campaign fits into the company’s innovation strategy and roadmap.”

The information flow inside and outside the process is crucial, because participants take the level of information provided by the management as a measure of the importance of the process. This is
supported by statements such as “…communication must be handled professionally, so that for example all employees know about the platform” and “regular information about the process should be sent via all the relevant information channels”.

A further important community requirement was the existence of an appropriate innovation budget. The innovation manager was seen as responsible for funding the process. One member stated that the innovation manager “…should allocate time and budget and facilitate participation.” In addition, the community expected to be rewarded for successfully solved innovation problems, as can be seen from the statement: “they (the innovation management) should provide tangible and intangible incentives. An active support at all organisational level is essential.”

Another expectation for this role was outlined by a participant who asserted “…everybody should know the exact process: what happens to the ideas, what else needs to be delivered and what stage of the process are we currently in?”

Another responsibility is supporting the community with information. Participants expected to receive all the relevant information and tool support needed to solve an innovation problem. This is supported by the following statement: “…content should also be provided by innovation management, not only just participants. They should provide articles, trends, inspiring videos, e-learning materials or any other content which supports the solution process.”

Another requirement was defined by a member who suggested the innovation manager should “…set up a continuous improvement cycle by integrating all relevant roles in feedback sessions.”

Another task for the innovation manager is deciding on the appropriate right process stages for different ideas (e.g., idea generation, development, evaluation and implementation). The innovation manager is advised to do this carefully and in conjunction
with the moderator and other decision makers, ideally also integrating further community members. It was stressed that professional communication behaviour must be decisive. The community requires “near-time information and transparency about decisions affecting how ideas are handled and all the different process stages.”

One community member speculated that a “…culture of open communication is necessary. People would appreciate it if innovation management communicated throughout the whole process. People are interested in near-time feedback, not only after an idea has been evaluated and decided on. It needs to be clear what happens next and how ideas will be handled.”

In this context, one participant claimed that “…open and constructive feedback is needed, explaining why one idea was accepted while another was rejected.” This was supported by another participant, who explained that: “…rejection should be based on transparent decision criteria.”

Another rather technical issue was mentioned by a participant who demanded “…access to the platform from anywhere and at any time via the internet”.

Table 33: Expected innovation manager behaviour

<table>
<thead>
<tr>
<th>Identified role</th>
<th>Expected behaviour for organisational implementation</th>
</tr>
</thead>
</table>
| Innovation manager | • Aligning the process with the corporate innovation strategy  
| | • Defining idea campaigns  
| | • Granting full management support  
| | • Safeguarding the process and the community by eliminating barriers and providing easy process access  
| | • Professionally communicating about the process stages and the decisions made, including communication about the process itself  
| | • Providing innovation budgets  
| | • Providing appropriate incentives in alignment with relevant motivators and barriers  
| | • Organising and allocating resources  
| | • Operating and improving processes |
4.4.3 The moderator role

To overcome the relative high resistance to change, a moderator is needed to push people within the community. This is underlined by an interviewee who stated “...I sometimes get the impression that people behave like an inertial mass. They sometimes need longer, but once they get going, what’s needed is time. Then they’re ready to change something.” The moderator is expected to provide impulses and stimulate different directions of thought. One participant stated “…this person must display a high desire for co-innovation. They should demonstrate strong willingness to take up these challenges and establish themselves in this role. They must be innovative themselves and need strong credibility and affinity to change. “

On the other hand, it seems important not to become too involved. One participant makes clear that “…the impulses of the moderator must not be too dominant, because the community should never feel like they’re being abused or working under someone’s direction. Things must feel balanced, with no hint of manipulation. The moderator should definitely not play a major role. They should only appear when necessary.”

Another task of a moderator is to maintain a permanent knowledge flow. As shown in chapter 2.2.2, in the paper by Lichtenthaler and Lichtenthaler, it is vital to install dynamic knowledge capabilities. This is confirmed by a member’s assertion that “…a moderator is essential for productive and useful knowledge flow”. A moderator keeps the discussion going by “…inviting other participants into the process and supporting interdisciplinary cooperation.”

In this context, another issue is expressed by the following statement: “…the moderator should sometimes leave the virtual world and invite people to a workshop to discuss things in more detail. Their main task is to visualise and explain the innovation and the ideas.”
Members also expect the moderator to create a positive cultural climate, as shown by assertion that “...employees should be involved in setting community rules”. The moderator plays a key role in community culture. One participant claimed that “...once you start to get unqualified comments or personal criticism, it is important for the moderator to intervene. They should explain that these kinds of comments are not acceptable and must maintain the tone of the discussion.”

Another participant explained how “...as soon as the moderator notices that the discussion is heading off-topic, they should bring it back on track. And as soon as a topic has reached saturation point, the moderator should wind up the discussion process.”

As ideas mature during the process, the moderator should also be able to assess the maturity of the community process and the degree of idea completion in order to integrate further knowledge or move on to the next process stage. One participant reported: “...sometimes I thought that we needed to bring things to a conclusion or merge ideas and move on to the next stage. In particular, the invitation to improve not just our own but other people’s ideas is a very important step. People don’t want to disappoint each other, and so they are very careful about making suggestions about ideas other than their own.”

Another point was raised by a participant who claimed “...if I participate I expect prompt feedback. If a week goes by without getting it, I’ll forget about the community and the discussion. Particularly in the early stages, I want to know whether I’m on the right track. What’s important? Is there new information available? Are there any new features? Are we moving in the wrong direction?”
Table 34: Expected moderator behaviour

<table>
<thead>
<tr>
<th>Identified role</th>
<th>Expected behaviour for organisational implementation</th>
</tr>
</thead>
</table>
| Moderator       | • Providing impulses and motivating people to participate in the community in a cooperative manner (agent of change)  
|                 | • Organising new information and caring about interdisciplinary knowledge flow  
|                 | • Running “live” workshops outside the virtual space  
|                 | • Caring about compliance with corporate cultural rules on the platform  
|                 | • Judging the maturity of the community process, recognising saturation and defining the next process stage  
|                 | • Summarising and merging ideas and motivating further improvements  
|                 | • Keeping the “arc of suspense” high by calling for further input or putting in final calls |

4.4.4 The process and platform maintainer role

To ensure an ideal innovation environment, a role is needed which is dedicated to setting up and tooling the platform. The community thought “...it’s important that new information technologies are available (in innovation management) such as apps for smartphones”. The administrator was asked to allow “…access from everywhere via the internet”, and community members asked that “…every employee in every department should be able to participate easily.” In this context it is desirable to technically integrate the platform into others, such as the enterprise communication portal.

The community expected a “...platform which is easy to use and easy to handle” and stressed the criteria “functionality, usability, user experience and visual representation”, along with “intuitive handling, tailored to explicit user requirements” and “security and data privacy”. This means the process and platform maintainer has a great deal of responsibility, because inadequate usability of the underlying software system can cause frustration and keep people away from participating. This is also illustrated by one interviewee’s statement that “...I am not a technology freak, but when something doesn’t work I get very nervous”.

Another participant stated “…all in all it was OK, but I think it could be a bit more self-explanatory and intuitive. You would need a certain amount of time if you didn’t log in right after the training session.”

Another one asked “…can you use your smartphone? That would let you could describe an idea very fast and you wouldn’t lose much time keeping track of your idea.”

A further requirement was suggested by a participant who explained “…I wanted a bit more navigation and guidance. It’s important to have more structure and pre-defined elements to formulate an idea”.

One participant said “…it would be nice to be able to arrange meetings right on the platform to meet for personal information exchange with others interested in the idea.”

A similar issue was mentioned by another participant, who declared “…being able to set up a new sub-group is important to discuss more detailed topics in a sheltered space. “

Another serious issue is the intelligent handling of information. This was addressed in the following statement: “…you need to be able to find relevant information faster. This is clear from the quality of the search engine. There are a lot of better examples of this on the internet.”

This was supported by one member’s opinion that “…you have to take the time to link information correctly. A marketing expert looks up information differently from a data processing expert, although they might be searching for the same thing. You need a self-learning tagging system to link ideas.”

In addition, many participants claimed that they wanted “…an intelligent information service which tells me what is really new and how is it linked to other ideas. This would induce impulses and could improve the communication process.”
Another task for this role is to offer process and platform training. The community suggest that “using a train-the-trainer approach could facilitate knowledge transfer in the company and reduce people’s reservations (towards the new concept)”. Some members also recommend that “direct web training sessions should be offered”.

Table 35: Expected platform maintainer behaviour

<table>
<thead>
<tr>
<th>Identified role</th>
<th>Expected behaviour for organisational implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform maintainer</td>
<td>• Administering the platform</td>
</tr>
<tr>
<td></td>
<td>• Integrating new technologies such as “cool apps”</td>
</tr>
<tr>
<td></td>
<td>• Caring about highly intelligent information services such as feed and efficient, context-sensitive information subscriptions</td>
</tr>
<tr>
<td></td>
<td>• Integrating the best search-engines and aiming to build a self-learning tagging system</td>
</tr>
<tr>
<td></td>
<td>• Technically integrating the process into other processes</td>
</tr>
<tr>
<td></td>
<td>• Providing good usability of the system by simplifying the process design (intuitive ease of learning)</td>
</tr>
<tr>
<td></td>
<td>• Providing training (train the trainer and web sessions)</td>
</tr>
<tr>
<td></td>
<td>• Providing access for everybody in the company from everywhere</td>
</tr>
</tbody>
</table>

4.4.5 The communications expert role

As shown above, adequate communication within the innovation community is vital. Therefore, it makes sense to install a role which exclusively deals with ideal communication process within and around the community. This was clearly supported by the communities’ desire to “…be actively involved in the process of setting cultural rules so nobody felt left out of the communication process.”

The communication expert therefore determines and monitors cultural rules together with the community and moderator. In addition, the role should entail monitoring issues like security rules and data protection, as illustrated by the assertion that someone should “…interfere when rules have been violated.”
Another issue which arose through the experiment is the workers’ council. All information processing systems containing private or personal data in the company must be supported by the workers’ council, who can prevent the roll-out of software if these rules are breached. To overcome this obstacle, the community recommended “early integration of the council to immediately allay potential concerns about their (the council's) allowance.”

In this context, the community found that the existence of dedicated cultural and behavioural rules is an important asset which should be installed before starting the process. This might avoid discord and demotivation among community members. People do not seem to trust that the input they deliver within such a community will be handled without later consequences or even penalties. This was clear from a paper containing the communities’ recommendations for organisational improvements, which stated “…that participation should not risk any consequences. This is essential in the later operation phases. In particular, people should be granted confidentiality. Nobody should be in fear of repercussions”.

The same paper suggested a further expectation from the community, namely “…a regular report in a dedicated part of the company newsletter reporting on the status of the latest innovations and revealing the rewards or other incentives participants received for participation. This would pique the interest of the entire staff and ensure the process doesn’t get fade into obscurity.”

Table 36: Expected communications expert behaviour

<table>
<thead>
<tr>
<th>Identified role</th>
<th>Expected behaviour for organisational implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communications expert</td>
<td>• Determining and monitoring cultural rules and practices together with the community and some moderators</td>
</tr>
<tr>
<td></td>
<td>• Monitoring issues such as security rules and data protection</td>
</tr>
<tr>
<td></td>
<td>• Intervening when rules are broken</td>
</tr>
<tr>
<td></td>
<td>• Integrating the council in conjunction with personal rights of community members</td>
</tr>
<tr>
<td></td>
<td>• Writing and publishing community success stories within the company’s communication channels such as the internal newspaper</td>
</tr>
</tbody>
</table>
5 Discussion

This chapter discusses the data gathered in chapter 4. It starts by discussing the surrounding conditions in chapter 5.1. Chapters 5.2 and 5.3 discuss motivators and barriers and the most relevant items are presented and compared for each community. Section 5.4 contains the implications for innovation management, while section 5.5 discusses the theoretical implications and evaluates the results from a methodological perspective. The limitations of the study results are highlighted in section 5.6.

5.1 Discussion of the surrounding conditions

C2mf was embedded within a rather positive cultural climate. This is corroborated by the results of the opinion survey carried out in 2014. Despite of the fact that all values are slightly worse than those from 2012, satisfaction indicators were still high, with 92% of participants very satisfied or satisfied with their employer and 84% very satisfied or satisfied with their current working situation. There are differences between the appreciation of general and direct management. General management induced significantly worse indicators than direct management. Only 80% of participants declared they were highly satisfied or satisfied with general management but 91% were highly satisfied or satisfied with their direct management. This points to a cultural gap between higher management and staff.

Another significant change was that participants would no longer recommend their employer unreservedly to friends and relatives. And many participants were more hesitant about whether they would apply again for a job at their company than in 2012 (see section 4.1.1).

But overall there is strong identification with the company in combination with a good cooperative climate across the different business functions. Only the estimate for willingness to change (see improvement measurements in question 11 in section 4.1.1) was
C1sf was also embedded within a rather positive surrounding cultural climate, as corroborated by the results of the 2014 opinion.

However, unlike C2mf, nearly every indicator improved compared to 2012, although they were still not at the same level as those for C2mf. Only 89% of participants were very satisfied or satisfied with their employer and only 80% were very satisfied or satisfied with their current working situation. There were also differences between appreciation for general and the direct management. General management induced significantly worse indicators than direct management, with 86% of participants declaring they were highly satisfied or satisfied with general management, while 92% were highly satisfied or satisfied with their direct management. This once again indicates a cultural gap between higher management and staff.

It is also significant that participants would not recommend their employer unreservedly to friends and relatives. And many participants were hesitant about whether they would apply again for a job at their company than in 2012.

But overall there is strong identification with the company in combination with a good cooperative climate across the different business functions. Only the estimate for willingness to change (see improvement measurements in question 11 in section 4.1.1) was alarming, particularly when it comes to innovation as a change process.

Participants from both communities declared innovation to be a very important topic. To maintain competitive market position and attract both customers and the next generation of staff members, community members advocated for enforcing innovation.
When talking about specific innovations implemented by their companies there was a huge gap between claimed and delivered innovation. When asked to name successful innovations from the last three to five years, most participants had to think quite a while before answering. The answers mostly mentioned new tariffs and improvements to digital access channels thanks to a web platform and new media such as Facebook and smartphone apps. Most participants felt their companies lagged behind innovation leaders in banking and also far behind their own capabilities.

When estimating the competitive market position, participants mostly saw the BSH Group as a market leader, but not in the context of innovation. Instead, market access and the salesforce were cited as the reason for BSH Group’s strong market position.

When asked about the innovation culture at BSH Group, most interviews gave a rather damning account. They complained about a mentality of safeguarding and a culture of avoiding risks. They also mentioned long periods between adopting technical inventions. They lamented the lack of clear innovation goals for each business area and advocated for a corporate culture which does not punish mistakes. They also lamented the major bureaucratic burdens surrounding the implementation of new concepts and ideas.

5.2 Discussion of motivators

As shown in sections 4.2.1 to 4.2.3, it was possible to rank the different classes of motivators. The most important motivators were intrinsic motivators (mean 3.4) followed by social extrinsic motivators (mean 2.89). Extrinsic motivators (mean 2.64), which are still subject to the most common incentive systems within internal innovation processes in banking, had the weakest impact. This should provide a strong impetus to reconsider the underlying incentive strategies.
Looking at the highly relevant items (totals >=3.25), we find the following motivators:

Table 38: Highly ranked motivators across all classes

<table>
<thead>
<tr>
<th>Class</th>
<th>Motivator</th>
<th>Totals</th>
<th>C1sf</th>
<th>C2mf</th>
<th>C1sf – C2mf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social extrinsic</td>
<td>Exposure to new viewpoints and synergy</td>
<td>3.58</td>
<td>3.5</td>
<td>3.61</td>
<td>-0.11</td>
</tr>
<tr>
<td>Intrinsic</td>
<td>Entrepreneurial mindset</td>
<td>3.57</td>
<td>3.375</td>
<td>3.66</td>
<td>-0.285</td>
</tr>
<tr>
<td>Intrinsic</td>
<td>Freedom and control</td>
<td>3.5</td>
<td>3.625</td>
<td>3.44</td>
<td>0.185</td>
</tr>
<tr>
<td>Social extrinsic</td>
<td>Open and constructive atmosphere</td>
<td>3.42</td>
<td>3.38</td>
<td>3.44</td>
<td>-0.06</td>
</tr>
<tr>
<td>Intrinsic</td>
<td>Potential later use of products, free use of products and services</td>
<td>3.42</td>
<td>3.75</td>
<td>3.27</td>
<td>0.48</td>
</tr>
<tr>
<td>Intrinsic</td>
<td>Expression of creativity</td>
<td>3.34</td>
<td>3.625</td>
<td>3.22</td>
<td>0.405</td>
</tr>
<tr>
<td>Extrinsic</td>
<td>Sense of efficacy</td>
<td>3.27</td>
<td>3.5</td>
<td>3.16</td>
<td>0.34</td>
</tr>
</tbody>
</table>

Comparing the different classes, it seems a future incentive system should focus on intrinsic and social extrinsic motivators. Participants are generally motivated by intangible assets such as knowledge exchange, entrepreneurial activities, self-determined and creative work and mutual respect in an open and productive learning atmosphere. Extrinsic motivators such as monetary rewards and job opportunities still dominate incentive strategies within innovation management in financial services, but they have a very limited effect. Thus it is important to provide the basic conditions to leverage intrinsic and social extrinsic motivators. The most important
precondition seems to be providing enough time to participate and an intuitive software platform.

As shown in sections 4.2.1 to 4.2.3, there are behavioural differences between service communities and communities located within marketing and sales. Participants from marketing and sales departments acted in a more self-reliant way and needed less leadership. They were used to creative work and were happy facing unplanned and unstructured challenges. Participating in such a community fulfilled their desire to be an internal entrepreneur.

Participants from service functions, on the other hand, needed a bit more guidance. They were unsure which knowledge they were allowed to post on the platform and preferred clear goals. Participants from service functions expected more support from management and were happy to participate in creative work, which many found to be a very welcome alternative to their original jobs. Improving services and the later use of their inventions is a serious driver for participation. Due to their very streamlined working environment, participants greatly appreciated the high efficiency of cooperation which is typically practiced on such platforms.

To overcome these behavioural differences, installing management roles seems a strong approach. It goes without saying that the behavioural expectations of the communities should be met as well as possible (see section 4.4).

5.3 Discussion of barriers

As shown in sections 4.3.1 to 4.3.3 there is no superior class of barriers to be nominated. Barriers related to work factors (mean 2.86) and cultural factors (mean 2.83) had similar means and were both definitely relevant to participants. Only barriers related to relationship factors (mean value of 1.92) seemed less important. On the one hand this relates very well to the surrounding conditions where participants reported a good relationship to their direct management
and to other departments within the company. On the other hand it
differs from the in-depth interviews where participants often reflect
different fears and uncertainties towards the higher management
(see also surrounding conditions, satisfaction with higher
management): This mismatch can only lead to the assumption that
the assessment values in this critical field are made better than the
situation really is. Apart from the following discussion it might make
sense to take at least those relationship barriers into further
consideration which are ranked higher than 2.5. Especially for the
community C1sf they are of a certain relevance (see B33R1="In-
team orientation", B31R2="Modesty", B32R3="Power distance",
B15R4="Uncertainty about knowledge publication", B21R5="Lack of
trust and confidentiality").

The following table provides a distribution of barriers (class to
relevance).

Table 39: Distribution of barriers (class to relevance)

<table>
<thead>
<tr>
<th>Class</th>
<th>Highly relevant 3.25 to 4</th>
<th>Definitely relevant 2.75 to 3.24</th>
<th>Relevant 2.5 to 2.74</th>
<th>Not relevant &lt; 2.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working context</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Cultural context</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Relationship context</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>9</td>
</tr>
</tbody>
</table>

Looking at the highly relevant items (totals >=3.25) we find the
following barriers:

Table 40: Highly ranked barriers of all classes

<table>
<thead>
<tr>
<th>Class</th>
<th>Barrier</th>
<th>Totals</th>
<th>C1sf</th>
<th>C2mf</th>
<th>C1sf – C2mf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working context</td>
<td>Lack of time, time pressure</td>
<td>3.61</td>
<td>3.75</td>
<td>3.56</td>
<td>0.19</td>
</tr>
<tr>
<td>Cultural context</td>
<td>High resistance to change</td>
<td>3.54</td>
<td>3.88</td>
<td>3.39</td>
<td>0.49</td>
</tr>
<tr>
<td>Cultural context</td>
<td>Bureaucracy and administrative burdens</td>
<td>3.42</td>
<td>3.25</td>
<td>3.5</td>
<td>-0.25</td>
</tr>
<tr>
<td>Working context</td>
<td>Communication problems</td>
<td>3.34</td>
<td>3.86</td>
<td>3.11</td>
<td>0.75</td>
</tr>
</tbody>
</table>
Comparing the different classes it can be summarised that a future innovation management system should focus on the avoidance or at least limitation of the above highly relevant barriers. Therefore the identified management roles play a decisive role (see section 4.4).

The most important barrier seems to be the lack of time for participation. Participants require a clear top management commitment and a dedicated time budget for participation.

To overcome the rather high resistance to change, bureaucratic burdens and the insufficient risk culture the following management roles play are required. The moderator actively integrates new participants on the platform whereas the innovation manager cares for the realisation of good ideas beyond static planning processes and administration. The top management promoter is present and encourages participants to take risks and supports if any problems arise during the process.

To conquer motivational barriers related to communication problems and unclear goals the innovation manager is stipulated. It is supposed to be an art of itself to provide clear and understandable innovation challenges combined with an appropriate participation architecture. It makes sense to stay in contact with the moderators and the community to reformulate goals and tasks in case of misapprehension.

Last but not least the platform maintainer cares for an optimised support by the IT platform. As seen earlier in this text it is unavoidable to integrate community members into the process of platform delivery and improvement.
As also shown in the sections 4.3.1 to 4.3.3 there are behavioural differences between service communities and communities located within marketing and sales. Participants of marketing and sales departments act more self-confident and need less leadership. They are used to diversified work and get along with tasks which go along with uncertainty and openness.

Participants of service functions on the other hand need a bit more guidance. They require more management communication within the process. They ask for a clear position of the management and want more guidance within the process. As they are used to rather repeatable working procedures they do perceive changes as disturbing influences which need to be overcome together with the management. Moreover they need a shelter in situations where they are heavily questioned by other community members and they seek for more appreciation for their input as members of marketing and sales functions. They are unsure which knowledge they are allowed to post on such a platform and show a higher power distance. Participants of this ancestry expect highly sensitive support of the management within the process.

5.4 Recommendations for innovation management

The successful establishment of internal online innovation communities between business and IT departments is a serious opportunity for the author’s company and the whole industry as it allows the virtual cooperation of internal and even external innovators at different locations and different times asynchronously. This way of virtual community-based cooperation can unfold enormous creative power integrating skills within and outside the company with nearly no limits. Especially the very good surrounding conditions as for example the very high level of internal and external expertise and an acceptable corporate climate should support such an innovation management approach especially in financial services.
But communities of this ancestry are hardly comparable with open source communities which prosper on self-determination and self-organisation. The direction and government of internal innovation communities are in the companies’ hand and they are located within the cooperate context of the launching company. As shown in the above sections this circumstance leads to different challenges for a successful implementation.

To let the relevant motivators unfold and to limit motivational barriers the intelligent interplay of the identified management roles is essential.

Recommended behaviour of the management promoter role (B1)

Beginning at the top management level the role “management promoter” creates the necessary framework for the whole process. He is visible in claiming innovation and supports the other management roles. He cares for the necessary resources and helps eliminating barriers and avoiding hierarchical intervention. Last but not least he appreciates good input and supports internal marketing for the outcome.

Recommended behaviour of the innovation manager role (B2)

On a more operational level the “innovation manager” aligns the process with the corporate innovation strategy. This role is aware of the context-specific appearance of motivators and barriers as shown in earlier sections of this text. Integrating this knowledge he designs the process and participation architecture together with all the other roles. He defines idea campaigns together with the relevant business areas within the company. He cares for an appropriate participation architecture and is supposed to be an excellent communicator. This role is responsible for the ideal configuration of the whole process providing the highly relevant incentives (see section 4.2 motivators) and directly eliminating disturbing barriers (see section 4.3 barriers).
Last but not least he cares for the evaluation, promotion and realisation of the community output.

Recommended behaviour of the moderator role (B3)

The most operational role is overtaken by the “moderator” who is responsible for integrating the right participants. He sets impulses and motivates people as a change agent. Directly working with the community he cares for compliance with the predefined cultural rules and judges the maturity of the community and its output. Organising and merging information he calls for interdisciplinary participation when necessary to ensure an “arc of suspense” until saturation is achieved.

Recommended behaviour of the platform maintainer role (B4)

A further very operational role is seen in the “platform maintainer”. On the one hand he is the technical administrator of the platform. He delivers intuitive usability and integrates appealing technologies such as apps. One the other hand he also cares for appropriate information services such as search engines, feeds and context sensitive information abonnements. He also cares for information delivery to surrounding processes and IT systems. Last but not least he provides innovative training such as Youtube tutorials or web-based trainings especially for platform features which are not self-explanatory.

Recommended behaviour of the communication expert role (B5)

The adequate communication within the innovation community is a mission critical topic. Therefore it makes sense to install a role which exclusively cares for an ideal communication process within and around the community. The “communication expert” therefore determines and monitors cultural rules together with the community and the role “moderator”. Moreover the role should be charged with
the monitoring of issues like security rules and data protection together with the workers council.

A further important task of this role could be summarised by the term “internal marketing”. As a story-teller he takes over the publication of interesting and successful ideas and discussions of the community. He also helps organising internal exhibitions where employees and guests will be positively confronted with the output of the innovation process. Last but not least he provides consulting to the other management roles in the very sensitive area of innovation communication (see section 2.2.2).

The conclusion of the above sketched leadership behaviour could be summarised as “supportive leadership”. Instead of directly managing people within the typical hierarchical management patterns of the financial industry this leadership style fosters self-determination and self-control of participants. It is more the participants that lead the process whereas the management is supposed to react and support or even follow the community. A serious problem seems to be that both leadership models have to be practiced in coexistence. Therefore it seems to be meaningful to develop new staff into these roles instead of bringing actual leaders and followers into ambivalent and conflicting role models.

Apart from concrete management behaviour and from a more methodological point of view the whole research process could be seen as a repeatable process context analysis for motivational issues within business processes which are semi-structured, knowledge intensive and voluntary. This method could also be executed in business domains beyond financial services by reusing and adjusting the questionnaires and interview guidelines as well as the codebook and the domain-specifically customised software environment of QSR NVivo 10.
The following table again addresses the practical problems within the establishment of internal innovation communities (see chapter introduction/derivation of research questions) and maps the above sketched management roles to get clear which role behaviours can minimize or at least care for these problems.

Table 41: Practical problems and relevant management roles

<table>
<thead>
<tr>
<th>Practical problem</th>
<th>Relevant role and role behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP1: Integration of the right people</td>
<td>Moderator (B3) and innovation manager (B3)</td>
</tr>
<tr>
<td>PP2: Insufficient self-organisation and self-motivation</td>
<td>Moderator (B3) and innovation manager (B2)</td>
</tr>
<tr>
<td>PP3: Different behavioural patterns of participants</td>
<td>Moderator (B2) and communication expert (B5) and management promoter (B1)</td>
</tr>
<tr>
<td>PP4: Uncertainty concerning the reaction of others</td>
<td>Management promoter (B1) and Moderator (B3)</td>
</tr>
<tr>
<td>PP5: Time pressure and uncertainty, whether participation is backed by the higher management</td>
<td>Management promoter (B1) and innovation manager (B2)</td>
</tr>
<tr>
<td>PP6: Confusion about management intervention by directing the idea process</td>
<td>Management promoter (B1)</td>
</tr>
<tr>
<td>PP7: Union aspects, employee council</td>
<td>Moderator (B2) and communication expert (B5) and management promoter (B1) and platform maintainer (B4)</td>
</tr>
</tbody>
</table>

5.5 Answers to research questions and theoretical implications

A very central driver for this research has been the weak anchoring of the hitherto management approaches of innovation communities into motivational concepts of motivation and demotivation. All of the examined papers in section 2.3 used different theories of motivation to explain the phenomenon of motivation but none of them considered motivating and demotivating aspects at the same time.
Theoretical goals of this research

In demarcation to the actual academic literature, which focuses on a single-sided consideration of motivational factors especially of an intrinsic nature the problem of demotivation had to be integrated to achieve a holistic view.

To do so a unique access to such communities has been necessary. Talking about cultural and motivational issues is only possible when a research climate of trust and mutual appreciation between researcher and participants will be achieved. Due to the fact that the researcher is also employed within the BSH group there was access to the communities and a good climate has been achieved by seriously considering all available ethical guidelines of qualitative research.

All in all the theoretical underpinning of this work can be seen as a test and adaption of a domain-specified version of the theory of Wunderer and Küpers and the concept of intrinsic and extrinsic motivation within the arena of virtual, internal innovation communities. To specify these concepts the general motivators and barriers in the context of OI has been collected from academic literature. The motivators have been classified in intrinsic, extrinsic and social extrinsic motivators and the barriers were assigned to the working context, the cultural context and the relationship context. The result of this conceptual transformation is a theoretical framework which crosses the concept of OI with the above mentioned theoretical concepts of motivation and demotivation (see chapter 2.4, research framework).

Research questions:

RQ1: Why does motivation decrease during the idea generation process within internal, social media-based open innovation communities?
RQ2: How can we win back lost motivation in such an innovation management setup?

Theoretical answers through the research propositions:

RP1: Demotivation (linked to RQ1)

An internal innovation community is influenced by work, cultural and relationship factors. Barriers related to these factors are potential sources of demotivation.

RP2: Remotivation (linked to RQ2)

Motivational barriers for members of internal innovation communities can be overcome via remotivating actions such as perceivably eliminating motivational barriers and alternative incentives addressing intrinsic, social extrinsic and extrinsic motives.

Theoretical findings

As shown in the section results this theory test can be declared as successful to a rather great extent. The classifications derived from theory were fully attested and provided a sensible and nearly consistent distribution of items. Moreover motivators and barriers were confirmed as concurrently relevant and could have been itemised and substantiated by extracting concrete appearances in the specific innovation environment of virtual innovation communities in financial services. As a further benefit the examination generated the intensity of the different motivators and barriers at least for the two observed communities which are of course not representative for all communities in financial services.

In demarcation to the hitherto findings (Motzek, 2006; Brabham, 2010; Jeppesen & Frederiksen, 2006; Battistella & Nonino, 2013; Antikainen, Mäkipää, & Ahonen, 2010; Muhdi & Boutellier, 2011) this work has shown that a single-sided focus on motivation would be inadequate. The corporate contexts of companies within financial
services deliver a too high portion of motivational barriers which have to be treated to unfold intrinsic and social extrinsic motivation. This finding could be simplified within the following formula: Intrinsic motivation + social extrinsic motivation – loss of motivation due to motivational barriers = spendable motivation within innovation communities.

It seems to be important to recall that the theoretical claim of this work hasn’t been the generalisable extraction of motivators and barriers to all innovation communities in financial services. Rather the coexisting validity of the underlying concepts has been proven in a domain-specific context. In this conjunction the ranking of motivators and barriers as well as the identified management roles and expected behaviours can be seen as secondary results which have to be supported by further research.

Primarily it seems to be important that motivation and demotivation have to be considered at the same time. Not only the avoidance of demotivation as suggested by Wunderer and Küpers nor the focus on intrinsic and extrinsic motivation alone can lead to desired outcomes. It is moreover the consideration and concretisation of both concepts which leads to a supportive management concept. These deliberations have been implemented within the research propositions RP1 and RP2 and are supported from findings of the different research steps.

The evaluation of RP1 by method- and data triangulation (questionnaire, in-depth interviews and document analysis) has shown that the different contexts delivered relevant barriers influencing the success of the innovation management process based on virtual, internal innovation communities. To an arguable extend the demotivation of experts can be explained under usage of this research proposition. The in-depth interviews delivered concrete appearances of barriers so that they are now concretised and thus made avoidable.
The evaluation of RP2 by method- and data triangulation (questionnaire, in-depth interviews and document analysis) has shown that there are a wide variety of different motivators. Intrinsic motivators are dominating but also social extrinsic motivators are of a serious relevance. Extrinsic motivators such as rewards play only a subordinate role.

The mutual interdependences and the compensatory impact of specific motivators to specific barriers haven’t been shown by this research approach. This would be a further interesting topic and a potential subject to further research.

In addition to these rather deductive and test-based findings the inductive parts of the data analysis brought first characteristics of a supportive leadership style. By extracting the concrete expectations of participants, relevant recommendations for an appropriate leadership behaviour (see behavioural patterns of management roles) has been made. Based on qualitative and inductive findings these patterns should also be proofed within quantitative research.

5.6 Limitations

As creative and inductive findings are subject to that research approach strange supporters of a positivist view note that this way of research may not be reliable enough due to a low number of participants and lack of rigour and statistical anchoring. To handle that risk two embedded units of analysis ware taken into account and the research framework contains evaluation criteria discussed in advance.

In addition the reliance to just one case can be seen as to be vulnerable because of its limited space for generalising the findings for many or all cases. It is important to respect that the chosen research design aims to discuss the underpinning theories/concepts and does not raise the claim of generalising the research results which is a clear limitation in terms of the reuse of the findings for the
whole industry. Rather the validity of the theory of Wunderer and Küppers has been proven in a domain-specific context. In this conjunction the ranking of motivators and barriers as well as the identified management roles and expected behaviours can be seen as secondary results which have to be supported by further quantitative research.

Besides that case studies contain the risk of a bias towards verification, that is, a tendency to confirm the researcher's preconceived notions. To limit that risk it is important to carefully maintain transparency throughout the whole research process by implementing different sources of evidence, setting up a research database and maintaining a chain of evidence. This was done as careful as possible by importing all sources of data into the qualitative analysis software NVivo. All analytical steps were undertaken by the transparent usage of NVivo reports.

Another point is that case study research is evolving. This means that data collection and the inquiry methods might be changed or adjusted during the research process. Criticisers might say that this kind of advancement is accidentally and not well-planned and thus not serious. By the chosen research process this risk has been restricted as it contains clear steps with a traceable set of predefined results and evaluation criteria. It contains data and method triangulation incorporating different sources of evidence. Although these preventive measures are taken, it can be expected that methods and data are vulnerable due to the fact that a limited data analysis has been carried out.

In addition, the focus of this study has been limited to financial services. Especially the rankings refer to a very limited number of participants. Therefore it is suggested to only use them within the BSH group itself.
Therefore these results definitely need further scientific affirmation probably by subsequent quantitative research in different industrial contexts with a larger number of participants.

### 6 Conclusion and future research

This chapter contains two sections. Section 6.1 briefly describes the research problem, the research goals, the methods and the main results. Section 6.2 contains future directions for research based on the findings of this study.

#### 6.1 Conclusion

Based on practical problems by establishing internal, virtual innovation communities within a market leading financial service company this thesis focuses on the research problem, why participants of such communities become demotivated and how remotivation can be achieved.

On the basis of a large scale literature review the research questions RQ1 and RQ2 (see section 1 and table 1) were confirmed and a holistic collection of motivators and barriers in the context of OI-communities was created.

In alignment with the following theoretical concepts extrinsic and intrinsic motivation and demotivation/remotivation the motivators were classified as follows (see also section 2.3.2 and tables 8, 9, 10):

1a: Intrinsic motivators

1b: Extrinsic motivators

1c: Social extrinsic motivators
The barriers on the other hand were classified in the following manner (see also section 2.3.3 and tables 11, 12, 13):

2a: Motivational barriers related to the working context

2b: Motivational barriers related to the cultural context

2c: Motivational barriers related to the relationship context

Combining the relevant insights of the underpinning theoretical concepts of OI, innovation community management and motivation, a research framework was derived containing the research propositions RP1 and RP2. These propositions dominated the deductive part of the later data analysis.

As far as the research methods are concerned a qualitative approach has been employed in alignment with the “why” and “how” nature of the research questions. In alignment to prior research paths and on the basis of a large criteria-based justification a single case study approach was selected. Due to industry specific deliberations the one community had a marketing and sales background and the other one was located in the back-office which is dedicated to service functions.

The data analysis contained 26 questionnaires; 20 in-depth interviews and some document analysis combining data triangulation, method triangulation and concept triangulation.

The results of the deductive iteration of analysis can be summarised as follows:

In demarcation to the hitherto research findings strongly focusing on intrinsic motivation, especially social extrinsic motivational factors play an important role within internal innovation communities too. Classical extrinsic motivators such as rewards or job opportunities play only a subordinate role. The most relevant motivators are of an intrinsic and social extrinsic nature.
In difference to the most research carried out in the field of innovation communities it has been shown that the consideration of the community context especially contextual barriers is of a decisive importance. The most relevant barriers are found in the working and cultural context.

The results of the inductive iteration of analysis can be summarised as follows:

The establishment of the derived five innovation management roles is necessary to integrate the relevant motivators and to minimise the relevant barriers within a holistic management concept. Therefore these roles should behave within a supportive leadership framework.

The contribution to theory

In demarcation to the actual academic literature it has been shown that a single-sided consideration of motivational factors especially of an intrinsic nature are insufficient. Social extrinsic motivators as well as the problem of contextually existent motivational barriers had to be integrated to achieve a holistic concept. These findings could be simplified within the following formula: Intrinsic motivation + social extrinsic motivation – loss of motivation due to motivational barriers = spendable motivation within innovation communities. These leads to the conclusion that neither the concept of intrinsic and extrinsic motivation nor the avoidance of demotivation alone explains the motivation phenomenon in such communities but the integration of both concepts within an integrated framework of supportive leadership can lead to desired community results.

The contribution to innovation management practice

Enabled by a unique access to community members the thesis extracted a range of highly relevant motivators and barriers to internal innovation communities based on social media technology. Within the deductive research iteration the items were classified and
ranked and set the basis for a holistic motivation concept to such an innovation management approach.

An intensive comparison between the two industry-typical community types has extracted differences in reactions and expectations of participants which are very important for innovation management.

Within its inductive dimension the research process complemented the above findings to a motivation oriented management approach which could be described as supportive leadership for virtual, internal innovation management communities. In this conjunction appropriate roles were identified and described as far as the behavioural expectations from participants of such communities are concerned.

In addition to this it seems very probable that the findings of this work could also contribute to other community-based and knowledge-intensive business processes such as for example support processes in the IT industry or other technology-intensive industries.

6.2 Future research

This research has encouraged the hypotheses that internal innovation communities featured by social technologies can be seen as a promising application of the OI concept to reach organisational ambidexterity by building and utilising dynamic capabilities. As this idea was only a side issue of the research process future researchers might deepen this statement by quantitative research.

In addition this research framework of this thesis delivers several further paths for future research. As already mentioned in the sections dealing with the limitation of this work the following directions might be interesting to future researchers:

- Qualitative research on the basis of the chosen research methods and the research framework in further, different cases / units of analysis
• Quantitative research based on the collection of items in a larger scale in financial services

• Quantitative research based on the collection of items in a larger scale and in another industrial context

• Qualitative research on the basis of the chosen research methods and the research framework for different knowledge and communication intensive business processes driven by a community setup

• Qualitative research on the basis of the chosen research methods and the research framework in a different cultural or intercultural setup

• Quantitative research on the basis of the chosen research methods and the research framework in a different cultural or intercultural setup.
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8 Appendixes

Appendix A: Questionnaire (closed questions)

This questionnaire will ask you to answer questions in different formats, as explained below:

Example 1:

Each question provides multiple items, which are presented in individual rows. Each row should have only one answer (marked by crossing a circle). Please only mark the answer which most accurately represents your opinion.

<table>
<thead>
<tr>
<th>Number</th>
<th>Item</th>
<th>strongly disagree</th>
<th>disagree</th>
<th>agree</th>
<th>strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 1</td>
<td>Simply having fun by interacting with others on innovation topics</td>
<td>○</td>
<td>X</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

Example 2:

Some questions give you the opportunity of write in your own answers. Please simply write down what you think.

<table>
<thead>
<tr>
<th>M 22</th>
<th>Any other things ...</th>
<th>○</th>
<th>○</th>
<th>○</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 23</td>
<td>Any other things ...</td>
<td>○</td>
<td>○</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Your opinion, in your own words:
I think that ....

Example 3:

Naturally you can omit questions, if none of the answers are suitable.
What do you perceive as the most fascinating reasons for participating voluntarily in an internal, social media-based innovation community?

Please mark just one answer per row!

<table>
<thead>
<tr>
<th>Number</th>
<th>Motivator</th>
<th>strongly disagree</th>
<th>disagree</th>
<th>agree</th>
<th>strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 1</td>
<td>Simply having fun by interacting with others on innovation topics</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 2</td>
<td>The freedom to bring in my expertise and to co-determine the direction of innovation topics</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 3</td>
<td>The intellectual stimulation and learning experience</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 4</td>
<td>The creative actuation</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 5</td>
<td>My entrepreneurial mind-set, e.g. to contribute to the company’s market success</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 6</td>
<td>The potential later use of the product/service by me and others</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 7</td>
<td>The chance to obtain a financial reward (supplementary grant, award)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 8</td>
<td>The contest/competition about the best ideas</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 9</td>
<td>The chance to get attention for my skills and abilities</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 10</td>
<td>The clear and interesting innovation goal/challenge</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 11</td>
<td>The active and supportive participation of the moderator or platform owner</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 12</td>
<td>The good usability of the platform and cool IT features</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 13</td>
<td>The high efficiency of collaboration with my colleagues</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 14</td>
<td>The sense of belonging to an innovation community</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
What do you perceive as the most fascinating reasons for participating voluntarily in an internal, social media-based innovation community?

Please mark just one answer per row!

<table>
<thead>
<tr>
<th>Number.</th>
<th>Motivators</th>
<th>strongly disagree</th>
<th>disagree</th>
<th>agree</th>
<th>strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 15</td>
<td>The chance to win a good reputation</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 16</td>
<td>The feedback of other participants</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 17</td>
<td>The open and constructive atmosphere within the community</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 18</td>
<td>The interesting argumentation and disputation of new standpoints and knowledge synergies</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 20</td>
<td>The sense of togetherness, the feeling of sitting in the same boat</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 22</td>
<td>The potential later use of the product/service by me and others</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 22</td>
<td>Any other aspects in own words….</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>M 23</td>
<td>Any other aspects in own words….</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

Your opinion, in your own words:
What do you perceive as the most disturbing influences during your participation in an internal, social media-based innovation community?

Please mark just one answer per row!

<table>
<thead>
<tr>
<th>Number</th>
<th>Barrier</th>
<th>strongly disagree</th>
<th>disagree</th>
<th>agree</th>
<th>strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>B 1</td>
<td>The lack of competence of other participants on the platform</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 2</td>
<td>The lack of management competence in the company</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 3</td>
<td>The lack of management support within the innovation process</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 4</td>
<td>The weak/bad usability of the platform, steep learning curve for participation on platform</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 5</td>
<td>Lack of tools and unclear processes</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 6</td>
<td>Lack of time, time pressure, dominance of day-to-day business</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 7</td>
<td>Lack of financial resources</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 8</td>
<td>Difficulties in aligning all participants towards a common innovation goal</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 9</td>
<td>Difficulties to integrate new participants into the community</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 10</td>
<td>Lack of commitment of other participants, counterproductive behaviour</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 11</td>
<td>Communication problems, lack of transparency of innovation decisions</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 12</td>
<td>Unclear or unrealistic innovation goals, topic does not meet the requirements</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 13</td>
<td>Early opponents due to open information access within the community</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 14</td>
<td>Lack of appreciation</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
What do you perceive as the most disturbing influences during your participation in an internal, social media-based innovation community?

Please mark just one answer per row!

<table>
<thead>
<tr>
<th>Number</th>
<th>Barrier</th>
<th>strongly disagree</th>
<th>disagree</th>
<th>agree</th>
<th>strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>B 15</td>
<td>Uncertainty about the publication of knowledge within the community</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
</tr>
<tr>
<td>B 16</td>
<td>Lack of monetary awards, lack of monetary incentives</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
</tr>
<tr>
<td>B 17</td>
<td>Lack of career advantages due to participation</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
</tr>
<tr>
<td>B 18</td>
<td>High resistance to change, lack of innovation culture</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
</tr>
<tr>
<td>B 19</td>
<td>Lack of flexibility of others / other participants</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
</tr>
<tr>
<td>B 20</td>
<td>Uncertainty to mislead others by my contribution</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
</tr>
<tr>
<td>B 21</td>
<td>Lack of trust what will happen with my input (disbursement in a negative way)</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
</tr>
<tr>
<td>B 22</td>
<td>Losing my face</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
</tr>
<tr>
<td>B 23</td>
<td>Fear of nasty feed-back</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
</tr>
<tr>
<td>B 24</td>
<td>Lack of behavioural rules concerning the usage of the innovation platform</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
</tr>
<tr>
<td>B 25</td>
<td>Bureaucracy and administrative burdens throughout the process</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
</tr>
<tr>
<td>B 26</td>
<td>Lack of willingness to invest in innovations</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
</tr>
<tr>
<td>B 27</td>
<td>Lack of willingness to cooperate amongst participants</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
</tr>
<tr>
<td>B 28</td>
<td>Information overload</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
<td>⃝</td>
</tr>
</tbody>
</table>
What do you perceive as the most disturbing influences during your participation in an internal, social media-based innovation community?

Please mark just one answer per row!

<table>
<thead>
<tr>
<th>Number.</th>
<th>Motivators</th>
<th>strongly disagree</th>
<th>disagree</th>
<th>agree</th>
<th>strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>B 29</td>
<td>Lack of self-confidence</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 30</td>
<td>Defensive attitude against technology and new media</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 31</td>
<td>Modesty / reservation of other participants</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 32</td>
<td>Power distance, influence of higher management</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 33</td>
<td>In-team orientation / not-invented here syndrome</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 34</td>
<td>Any other aspects in own words…</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B 35</td>
<td>Any other aspects in own words…</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

Your opinion in your own words:
Appendix B: Questionnaire (open questions)

**Background Information**

- Service community (C1sf):
- Near market community (C2mf):
- Date:
- Room number:
- Time:
- Number of participant:
- Community:

**Introduction:**

- *Question about the participant’s wellbeing*
- *Formal information for participant about anonymity, confidentiality, signatures and formal regulations and ethics procedures*
- *Does the participant have any questions in advance?*
- *Information about the recording equipment and participant’s agreement*
- *Check equipment and interview guide*
Opening questions:

Q1: Can you give me a short description of your job? What are the most important characteristics of your role within the company?

Q2: What are the most important characteristics of the roles you cooperate with?

General questions about management and willingness to change:

Q3: How important do you think innovation is for our company?

- Why?
- What has been our most successful innovation of the last 3 years?

Q4: How do you assess the achievement of the following strategic self-conceptions about innovation?

- C2mf: “We are early adopters of new products and processes. We transform our business model to other markets and strategic business areas.” (Source: “horizon 2020” strategy document)
- C1sf: “We are market leader in the processing of credits and financial house saving products in Germany. This self-conception is based on high engagement and the willingness to change in the field of processing and IT. We will strengthen our position a cost- and technology leader in our market.” (Source: company mission statement)
Q5: What do you think about the framework for implementing this strategic self-conception?

- Culture, relations, working conditions
- Where does it work, where does it not?

Q6: What is your impression of management’s attitude towards innovation?

- How seriously is innovation promoted at the top management level?

Q7: What do you think about our corporate willingness to change in the context of the following strategic self-conception?

- “Reaching our goals for us means: we never stand still, we scrutinize things and we change perspectives and adopt innovation”. (Source: BSH mission statement)

Questions concerning the relevant community context:

Please think back on the platform and your participation!

Q8: What positive moments can you remember from participating in the innovation community?

- Why?
- Why did you participate?
Q9: What have you seen as particular barriers to participation?

- Culture, relations, working context
- Potential further problems
- How can we overcome this? What do you think needs to happen for this to change?

Q10: Why do you think some people do not participate despite having the requisite knowledge?

- Culture, relations, working context
- How can we overcome this? What do you think needs to happen for this to change?

Q11: Why did the ideation process tend to falter?

- Culture, relations, working context
- Lack of participation?
- Why does it work on Fridays?

Q12: How important do you think clear innovation goals or statements of direction are to the success of such an ideation process?

- What would happen if it was narrower?
- What would happen if it was more open?
Questions concerning the innovation platform?

Q13: How do you feel after posting a new idea when you know that everybody can see your contribution?
   - Feelings, expectations,
   - Anonymity, sandbox first?
   - Asynchronous work as an opportunity or barrier?

Q14: How did you perceive the usability of the system and how important is this for successful implementing this kind of process?
   - Examples, barriers, jump start?

Q15: What do you expect from the moderator?
   - What is their ideal behaviour?
   - Why do you think it is better to have a moderator?

Q16: What do you expect from innovation management in terms of information and communication about the process?
   - Decision communication
   - Process information
Questions concerning security and intellectual property

Q17: Could you imagine any consequences resulting from your participating in such a community?

- Positive and negative aspects
- How can we overcome this? What do you think needs to happen for this to change?

Q18: What do you think about participation from members of level one and two top management?

- Positive and negative aspects
- What is the expected impact?

Q19: When participating, you often have to publish personal knowledge. What do you think are the opportunities and risks of doing so?

- Feelings, perceptions…

Q20: How safe do you feel about publishing knowledge?

- Data security?
- Intellectual property?
- Trust in other participants?
- Workers union?
- Rules of the game?
Questions concerning virtual stimulation to support cooperation, corporate incentives and gamification approaches

Q 21: How did you perceive platform content such as the posted trends and inspirations?

- Video content, audio, YouTube and more…

Q 22: Imagine we added platform features such as likes, smilies and other virtual rewards. What do you think would be the impact of such gamification features?

- Facebook likes, WhatsApp pictures, levels like video games

Q 23: People frequently post ideas and concept sketches. How do you think we could stimulate cooperation between participants on other ideas than their own input?

- Corporate social projects as incentives?
- Corporate rewards?

Closing question

Q24: If this was your company, would you enforce this approach to innovation management? If so, what are the three main things you would change to support this?
Appendix C: IT Platform Itonics idea manager

Idea-Manager
The integrated, collaborative ideation engine - capture, structure, evaluate and select inspirations, trends and ideas on one online platform!

Challenge
- How to engage employees in the innovation process quickly and pragmatically?
- How to build and establish a global innovation community?
- How to perform innovation competitions (or campaigns) on the fly?
- How to enrich idea management with trends and inspirations within one holistic approach to innovation?
- How to motivate and engage employees, clients and external partners intrinsically?
All of these tasks (and a lot more) are addressed by our unique online solution Idea-Manager!

Solution & Integration
- We define your individual Idea-Manager perfectly integrated in your technology architecture, processes and innovation management
- seamless integration into your workflow
- Interfaces to IBM Connections, Microsoft SharePoint, Jive and many other social collaboration tools
- Single Sign-On
- Individual Look&Feel following your style guide
- Rights and roles are configured according to your requirements
- Easy integration of local entities, external partners and existing trend databases
- Multilingual interfaces

Features
- Collaborative idea scouting
  Community-based idea generation, selection and evaluation within a collaborative process
- Innovation communities
  Engage colleagues, customers and partners within specific innovation communities
- Idea competitions; gamification
  Gamification and idea competitions for an increased user acceptance and motivation
- Mobile Access
  App integration for access from smartphone and tablet possible
- Dynamic analysis and visualization
  Dynamic visualization of results with various output options
- Ideaion Dashboard
  Reporting tool for innovation controlling
- Collaborative evaluation
  Evaluation of ideas together with colleagues worldwide
- Various Interfaces
  Interfaces to e.g. SharePoint, IBM Connections, etc.

Collaborative idea scouting
An inspiration is the precursor to an idea. Inspirations immerse on the go and usually not at work. For this reason, spontaneous ideas, market observations, competition activities and inputs from exhibitions or industry events can be collected quickly with the Innovator App and saved for later refinement and analysis. An inspiration ideally stimulates for further reflection and if it's shared, it ignites the colleagues' creativity to develop an idea based on one or more inspirations. Inspirations are collected with the Innovator App as text, images, video or audio files on the smartphone and uploaded immediately or later in the Itonics Idea-Manager. Objects collected with the smartphone can also be modified on the PC later on. The goal of the Innovator App is to link inspirations to the idea generation process.
Dynamic analysis and visualization

How successful is my ideation campaign? Can you show me the top rated ideas in multiple dimensions and the most active areas? In which search areas are we strong on ideas and where do we need to improve? In which areas of the company are we particularly innovative?

All these questions (and many more) are answered by our data analysis component with flexible data visualizations - fast and easy!

Innovation communities

Employees rate, discuss and develop inspirations, ideas and concepts collaboratively within the Ideation Manager. The best ideas can be displayed directly on the landing page of your intranet. Our reputation system motivates and engages all participants and every activity is rewarded instantly.

Our module “innovation community” also enables the social networking of innovative colleagues worldwide. Moderators can create groups in key areas of innovation, build open innovation communities or create private groups for a dedicated user group.

Ideation Dashboard

Is a campaign successful? Does the participation in idea management ease off? How strong are individual features of the Ideation Manager used?

The Ideation Dashboard answers these questions and many more. This comprehensive reporting tool is used for innovation controlling and the continuous improvement of all idea management activities. Selected user groups can create individual reports via a given set of criteria with a few clicks only. The Ideation Dashboard also allows for periodic reports with a wide range of innovation indicators.

All analysis results are presented graphically and offer filter functionalities for deeper insights. Furthermore, all reports can be exported in various formats for further analysis.
Appendix D: IT Platform IBM Connections

Business social network platform helps improve knowledge sharing, decision-making and innovation

IBM® Connections™ is a leading business social network platform that helps you get work done. Connections allows your organization to engage the right people, accelerate innovation and deliver results. Using this business social network, you can confidently share knowledge beyond traditional organizational boundaries. Connections can help you improve decision-making, increase productivity and accelerate time to market on a platform that is delivered on premises or as software as a service on IBM Cloud.

IBM Connections is a market-leading business social network platform that can help you:

- **Empower people.** Innovate anywhere—mobile, web and desktop, even offline.
- **Engage people.** Filter out the noise and illuminate ideas.
- **Inspire innovation.** People-centric platform allows ideas and communities to thrive.
- **Trust people and extend technology.** Safely collaborate with customers and partners, bringing them into the conversation.

**Empower people**

- Innovate without boundaries. Work with anyone virtually anytime, anywhere, even offline.
- Discover relevant social and business process activities occurring in your personal network or community through activity streams.
- Quickly take action on content and events in context, without navigating to another process or application.
- Get the IBM Connections mobile app at no charge:
  - Get your app at the Google Play store (Link resides outside of ibm.com)
  - Get your app at the Apple App store (Link resides outside of ibm.com)
  - Get your app at BlackBerry World (Link resides outside of ibm.com)

**Engage people**

- Provides an interface that helps employees get through the clutter and focus on what’s important.
- Promotes social analytics and personalization drive adoption to deepen relationships.
- Embedded experience allows you to work in a single, familiar environment across a wide variety of business applications including third-party applications.
- Integrated Connections Mail provides a compelling social email and calendar experience.
- IBM Connections Mail supports both IBM Domino® and Microsoft Exchange messaging services.

**Inspire innovation**

- Gather, generate and improve ideas provided by anyone, from your newest employee to your most seasoned executive. Anyone can participate from virtually any location.
- Accelerate better decision-making by discovering trends in content, social activity and expertise.
- Discover who and what you need to know through IBM Connections recommendations.
- Keep customers, partners and employees engaged, contributing and valued.
Trust people and extend technology

- Expand collaboration beyond organizational boundaries to include customers, partners, vendors and contractors using a security-rich platform.
- Use social analytics and personalization to drive adoption and deepen relationships.
- Work in a single, familiar environment across a wide variety of business applications including third-party applications with embedded experience.
- Engage people with a compelling, integrated social email and calendar experience. IBM Connections Mail supports both IBM Domino® and Microsoft Exchange messaging services.

Home page
See what is happening across your social network and access the social data that is important to you.

Profiles
Find and discover the expertise you need.

Communities
Work together with people who have common interests, roles and expertise. Also includes ideation, media gallery, and bridging capabilities.

Blogs
Present your ideas, receive feedback and make the most of the experience and opinions of others.

Micro-blogs
Reach out for help or share news with your network.

Bookmarks
Find, save and share useful web-based content.

Mail
Bring information and experts immediately into view by easily sharing conversations that would have otherwise been hidden in email, for faster and more informed decision-making.

Activities
View, manage and organize tasks and quickly complete them. Tap into your professional network.

Wikis
Create and share content together with your teams and professional network.

Files
Share and discover documents, presentations, images with your colleagues. Eliminate system duplicates and reduce the amount of mail in your inbox. Provide rich social content & document management experience with add-on capabilities provided by IBM Connections Content Manager

Forums
Exchange ideas with others and benefit from their expertise.

Social Analytics
Discover who and what you need to know through recommendations.

Polls and Surveys
Quickly and easily gather feedback from clients, partners and customers.

Docs
Add IBM Docs online office productivity suite for more efficient document collaboration.
Appendix E: Consent Form

CSU Faculty of Business

CONSENT FORM

Motivators and barriers to internal, social media based open innovation communities in financial services

Researcher: Jürgen Hirsch, M.Sc., Dipl.Wirt.Ing(FH), SN: 11483525, Course: 2902BA -> DBA
Contact: Juergen Hirsch, Gartenstrasse 11, 74423 Obersontheim, Germany, E-Mail: Hirschoso@web.de

Principal Supervisor: Prof. Dr. Herbert Fischer, TH Deggendorf, Germany
Contact: Prof. Dr. Herbert Fischer, TH Deggendorf, Edlmairstrasse 6+8, 94469 Deggendorf, E-Mail: herbert.fischer@th-deg.de

Co-Supervisor: Prof. Dr. Brian D’Netto, Charles Sturt University, Australia
Contact: Charles Sturt University, Campus Albury/Wodonga, E-Mail: bdnetto@csu.edu.au

I agree to participate in the above research project and give my consent freely.

I understand that the project will be conducted as described in the Information Statement, a copy of which I have retained.

I understand I can withdraw from the project at any time and do not have to give any reason for withdrawing.

I consent to participating in:
(Yes or no option by crossing each check box with an x)
- in-depth interviews
- filling in questionnaires
- a focus group discussion

I understand that participation in all three stages is voluntary. If I choose to participate by returning a questionnaire I am not obliged to agree to an interview or a focus group discussion and vice versa.
I understand that:
- The interview phase will last from the beginning of September 2014 until the end of the year.
- The questionnaire phase will last from the beginning of August until the end of the year.
- The focus group discussion will take place in December 2014.

I understand that my personal information will remain confidential to the researchers.

As far as the focus group discussion is concerned, I understand that anonymity and confidentiality cannot be guaranteed and individual contributions cannot be withdrawn if a decision is made to withdraw participation after the focus group discussion is held.

I have had the opportunity to have questions answered to my satisfaction.

Print                  Name:

________________________________________________________

Signature:_________________________ Date:__________________

NOTE: Charles Sturt University’s Human Research Ethics Committee (for minimal risk projects list the School that approved the research) has approved this project. If you have any complaints or reservations about the ethical conduct of this project, you may contact the Committee through the Executive Officer:

The Executive Officer
Human Research Ethics Committee

Tel: (02) 6338 4628
Email: ethics@csu.edu.au

Any issues you raise will be treated in confidence and investigated fully and you will be informed of the outcome.
Appendix F: Participant Information Sheet

CSU Faculty of Business
PARTICIPANT INFORMATION SHEET

(Motivators and barriers to internal, social media based open innovation communities in financial services)

Researcher: Jürgen Hirsch, M.Sc., Dipl.Wirt.Ing(FH), SN: 11483525, Course: 2902BA -> DBA
Contact: Juergen Hirsch, Gartenstrasse 11, 7 44 23 Obersontheim, Germany, E-Mail: Hirschoso@web.de

Principal Supervisor: Prof. Dr. Herbert Fischer, TH Deggendorf, Germany
Contact: Prof. Dr. Herbert Fischer, TH Deggendorf, Edlmairstrasse 6+8, 94469 Deggendorf, E-Mail: herbert.fischer@th-deg.de

Co-Supervisor: Prof. Dr. Brian D’Netto, Charles Sturt University, Australia
Contact: Charles Sturt University, Campus Albury/Wodonga, E-Mail: bdnetto@csu.edu.au

Invitation

You are invited to participate in a research study on open innovation based on an internal social media platform.

The study is being conducted by Juergen Hirsch, who is a doctoral student at the Charles Sturt University.

Before you decide whether or not you wish to participate in this study, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with others if you wish.

1. What is the purpose of this study?
   This research aims to deliver a conceptual approach towards the successful establishment of virtual, internal open innovation (OI) communities in financial services by crowdsourcing expert participants from specialist areas, business and IT, utilizing as much value creating knowledge as possible. It focuses on the motivational perspective of participants
researching motives and barriers in the cultural, organisational and strategic context of a market leading financial service provider in Germany. It aims to contribute to knowledge in a theoretical and in a practical dimension. By comparing two theories for motivation in the area of open innovation of internal innovation communities it tries to integrate complementary but rival theoretical explanations for motivation in this specific innovation set up. This aims to expand the existing theoretical underpinnings in the field of motivation in open innovation. From a practical point of view it delivers recommendations towards the design of an integrated incentive systems stimulating internal innovation by considering both motivational and de-motivational aspects. It considers the specific community context and tries to find out how this context influences motivation. From a business management point of view it also delivers new insights into community based business processes. The internal innovation process can be understood as a pattern for a set of similar processes utilising a community for a corporate problem solution process. This is for example the case within processes such as incident or complaint management.

2. Why have I been invited to participate in this study?
You have participated voluntarily in a leadership development program for young professionals at the Bausparkasse Schwäbisch Hall group and have participated in a pilot community in the pre-phase of this research project. The participants were chosen in equal numbers from IT departments and from business departments.

This community will serve as the "unit of analysis" in this research project, which is a consequence of the above pilot project.

3. What does this study involve?
The chief researcher, Mr. Juergen Hirsch, confirms that the research project is backed by the higher management, the HR department and the workers council. The management will not be informed who will be participating.

If you agree to participate, you will be asked to take part in all three stages of the research project:
- a) In-depth interviews (which will be lasting ~ 45 minutes)
- b) Filling in questionnaires (requiring one hour of time)
- c) A focus group discussion (lasting ~about 90 minutes)

The participation in all three stages is voluntary. If you choose to participate by returning a questionnaire, you are not obliged to agree to an interview or a focus group discussion and vice versa. The interview phase will last from the beginning of April 2014 until the end of July. The questionnaire phase will last from the beginning of August until the end of September. The focus group discussion will take place in December 2014.
In addition to this different managers (community context) will be interviewed to get insights into the innovation environment of the community. The interviews will be carried out by the researcher himself and will be recorded on an electronic file system. The focus group discussion will be recorded as well. The records will be kept anonymously under the exclusive access of the researcher. Nobody else can get access to this information. If you choose to participate by returning a questionnaire, you are not obliged to agree to an interview or a focus group discussion.

4. Are there risks and benefits to me in taking part in this study?

Benefits:
This research aims to contribute to knowledge in a theoretical and in a practical dimension. By comparing two theories on motivation in the area of open innovation of internal innovation communities it tries to integrate complementary but rival theoretical explanations on motivation in this specific innovation set up. This aims to expand the existing theoretical underpinnings in the field of motivation in open innovation. From a practical point of view it delivers recommendations towards the design of an integrated incentive system stimulating internal innovation by considering both motivating and demotivating aspects. It considers the specific community context and tries to find out how this context influences motivation. From a business management point of view it also delivers new insights into community based business processes. The internal innovation process can be understood as a pattern for a set of similar processes utilising a community for a corporate problem solution process. This is for example the case within processes such as incident or complaint management. The participants will benefit when the research findings will be implemented within a new incentive management system.

Risks:
In spite of undertaking all thinkable security efforts there will be a small risk, that the results of interviews might be traceable back to the interviewee. The most important risk measure is to keep all information anonymous and stored on secure files. An improvement of the incentives structure will definitely be to the benefit of all participants, because it stimulates innovations and delivers personal and corporate success and pride.
5. How is this study being paid for?

The study is partly funded by the researcher and the company, the researcher works for (Bausparkasse Schwäbisch Hall group).

6. Will taking part in this study (or travelling to) cost me anything, and will I be paid?

There is no payment or costs for participation. Travelling is not necessary.

7. What if I don't want to take part in this study?

Participation in this research is entirely your choice. Only those people who give their informed consent will be included in the project. Whether or not you decide to participate, is your decision and will not disadvantage you.

If you do decide to participate, you may withdraw from the project at any time without giving a reason and have the option of withdrawing any data, which identifies you.

8. What if I participate and want to withdraw later?

If you decide to participate, you may withdraw from the project at any time without giving a reason. This also implies removing all data relating to my questionnaire and interview responses.

9. How will my confidentiality be protected?

The participants will be asked about motivating and demotivating perceptions within the innovation process. All Information will be kept anonymously within typical qualitative research procedures. Nobody but the researcher will have access. The data will be stored on a file system in a locked room and which is not accessible via internet. The data will be deleted one year after the research project will have been ended. Anonymity and confidentiality cannot be guaranteed within focus group discussions. Individual contributions cannot be withdrawn if a decision is made to withdraw participation after the focus group discussion is held.

10. What will happen to the information that I give you?

The data will be presented in a doctoral thesis and a journal paper. The data will be presented totally anonymously.

The presentation only includes abstract and anonymous information. There will be no possibility to track back to a certain person or a role. One example could be: “one person stated that the time pressure is very high so that participation in an innovation community is very difficult”
Feedback is given as a presentation of the results of the questionnaires within a focus group discussion. Moreover all the written transcript of an interview will be offered for quality assurance.

11. What should I do if I want to discuss this study further before I decide?

If you would like further information please contact Juergen.Hirsch@schwaebisch-hall.de

12. 'Who should I contact if I have concerns about the conduct of this study?'

NOTE: Charles Sturt University’s Human Research Ethics Committee has approved this project. If you have any complaints or reservations about the ethical conduct of this project, you may contact the Committee through the Executive Officer:

The Executive Officer
Human Research Ethics Committee

Tel: (02) 6338 4628
Email: ethics@csu.edu.au

Any issues you raise will be treated in confidence and investigated fully and you will be informed of the outcome.

Thank you for considering this invitation.
### Appendix G: Codebook Motivators

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Number Of Sources Coded</th>
<th>Number Of Coding References</th>
</tr>
</thead>
<tbody>
<tr>
<td>M01=Enjoyment</td>
<td>User innovators report to have fun in creating new products which bear their own handwriting</td>
<td>13</td>
<td>21</td>
</tr>
<tr>
<td>M02=Freedom and control</td>
<td>Users prefer the freedom of defining the direction of their work by themselves</td>
<td>14</td>
<td>21</td>
</tr>
<tr>
<td>M03+M18=Intellectual stimulation and learning experience</td>
<td>Users like the feeling of having solved a problem and the increase of knowledge</td>
<td>21</td>
<td>33</td>
</tr>
<tr>
<td>M04=Creative actuation</td>
<td>The ability of expressing oneself by the use of artistic capabilities, which are often unused due to routine procedures</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>M05=Entrepreneurial mindset</td>
<td>Some users are typical “men of action” due to entrepreneurial propensity</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>M06=Personal benefit by potential later use of products and services</td>
<td>Driven by their dissatisfaction with the actual offering, users deliver specific knowledge concerning future product needs</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>M07=monetary compensation</td>
<td>Earning additional money is a driver for participating in the OI process as well</td>
<td>17</td>
<td>32</td>
</tr>
<tr>
<td>M09=new job opportunities</td>
<td>Especially in technical communities such as open source software the motivation to get a job within a software company is reported to be a motive</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>M10=clear objectives</td>
<td>Collaboration on an innovation platform is time consuming and clear goals could help to spend certainty about the own activities</td>
<td>17</td>
<td>28</td>
</tr>
<tr>
<td>M11=role moderator, active participation</td>
<td>Collaboration on an innovation platform is time consuming so that catalysing support is perceived as very helpful</td>
<td>20</td>
<td>51</td>
</tr>
<tr>
<td>M12=usability of software</td>
<td>The usability of the system can be perceived as a flow-experience</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>M13=sense of efficacy</td>
<td>Expert community collaboration can be very efficient and that provides a flow feeling</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>M14+M20=affiliation to a certain community</td>
<td>The sense of belonging to a specific group of people and the mutual appreciation; the</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>M15 = reputation and appreciation</td>
<td>Users expertise is recognized by other members of the community</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>---------------------------------------------------------------</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>M16 = feed-back</td>
<td>The immediate response of the community helped them to improve their product designs/ideas</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>M17 + M18 = open and constructive atmosphere and altercation with new standpoints</td>
<td>Supportive and constructive atmosphere enables easier collaboration and creates new viewpoints and synergy when participants have different backgrounds</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>M18 = learning from others</td>
<td>People participate to learn from others</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
## Appendix H: Codebook Barriers

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Number Of Sources Coded</th>
<th>Number Of Coding References</th>
</tr>
</thead>
<tbody>
<tr>
<td>B01=lack of competent personal and expert knowledge</td>
<td>The average/overall competence within the company is not sufficient</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>B02=insufficient management knowledge</td>
<td>The legal and administrative competence within the company is not sufficient (such as administrative and legal knowledge)</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>B03=insufficient management support within the innovation process</td>
<td>Support of management is not sufficient</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>B04=insufficient usability and restrictions to easy access</td>
<td>The supporting technology for the innovation process is not sufficient or insufficient usability of systems and tools</td>
<td>22</td>
<td>45</td>
</tr>
<tr>
<td>B05=lack of tools</td>
<td>Tools and processes within the innovation process are not sufficient</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>B06=time pressure, no dedicated time resources</td>
<td>Priority of daily business, time restrictions due to other more important tasks</td>
<td>21</td>
<td>35</td>
</tr>
<tr>
<td>B07+B26=insufficient financial resources or willingness to invest</td>
<td>Obtaining financial resources is seen as a problem</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>B08=difficulties in aligning participants</td>
<td>The ability and willingness of aligning people is insufficient</td>
<td>18</td>
<td>31</td>
</tr>
<tr>
<td>B09=number of participants too low, problems with integrating new people</td>
<td>The ability and willingness of integrating people is insufficient</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>B10=lack of commitment, unsupportive behaviour</td>
<td>People are not committed to the community, behave in a counter-productive way</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>B11=communication problems and lack of processes and decision transparency</td>
<td>The ability and the willingness to communicate is insufficient</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>B12=unclear and unrealistic goals</td>
<td>Frittering due to a too specific level of innovating→ expert trap, the ability to judge the customer demand is not sufficient</td>
<td>18</td>
<td>31</td>
</tr>
<tr>
<td>B13=early opponents and not invented here</td>
<td>Early opponents due to open information access</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>B14</td>
<td>lack of appreciation</td>
<td>Lack of appreciation of management towards the participants</td>
<td>2</td>
</tr>
<tr>
<td>B15</td>
<td>uncertainty which knowledge can be published</td>
<td>People are afraid of the effect of publishing knowledge, which might be subject to protection</td>
<td>1</td>
</tr>
<tr>
<td>B18</td>
<td>high resistance to change</td>
<td>People are afraid in adopting new ideas, tendency to protect traditional thoughts</td>
<td>21</td>
</tr>
<tr>
<td>B21</td>
<td>lack of trust</td>
<td>People do not trust each other</td>
<td>2</td>
</tr>
<tr>
<td>B22</td>
<td>face saving</td>
<td>People are afraid of losing their face</td>
<td>12</td>
</tr>
<tr>
<td>B23</td>
<td>fear of negative feedback</td>
<td>People do fear feed-back as there might be critical standpoints as well</td>
<td>12</td>
</tr>
<tr>
<td>B24</td>
<td>lack of cultural rules</td>
<td>Cultural and behavioural rules are expected from members of such communities</td>
<td>8</td>
</tr>
<tr>
<td>B25</td>
<td>bureaucracy</td>
<td>Bureaucracy and administrative burdens too high</td>
<td>9</td>
</tr>
<tr>
<td>B26</td>
<td>insufficient willingness to invest, risk culture</td>
<td>The willingness of the company to invest in innovation and to bear risks is too low</td>
<td>7</td>
</tr>
<tr>
<td>B27</td>
<td>lack of willingness to cooperate due to personal reservation</td>
<td>People don’t want to cooperate</td>
<td>4</td>
</tr>
<tr>
<td>B28</td>
<td>information overload</td>
<td>Too much information is provided so that people feel stressed by dividing information into relevant and irrelevant information</td>
<td>8</td>
</tr>
<tr>
<td>B30</td>
<td>resistance to technology</td>
<td>Lack of adopting new technological innovations</td>
<td>4</td>
</tr>
<tr>
<td>B31</td>
<td>modesty</td>
<td>People are not self-confident enough to publish ideas</td>
<td>7</td>
</tr>
<tr>
<td>B32</td>
<td>power distance</td>
<td>The impact of hierarchical higher located people</td>
<td>18</td>
</tr>
<tr>
<td>B33</td>
<td>in-team orientation, lack of interdisciplinary cooperation</td>
<td>People are not willing or able to act across team boundaries, not-invented here syndrome</td>
<td>3</td>
</tr>
<tr>
<td>B34</td>
<td>work council and aspects of data protection</td>
<td>Behaviour of work council can influence the motivation in a negative way</td>
<td>1</td>
</tr>
</tbody>
</table>
## Appendix I: Standard deviation of motivators and barriers

<table>
<thead>
<tr>
<th>Motivator</th>
<th>Mean</th>
<th>Standard deviation of both samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>M05</td>
<td>3.58</td>
<td>0.50</td>
</tr>
<tr>
<td>M02</td>
<td>3.50</td>
<td>0.51</td>
</tr>
<tr>
<td>M06</td>
<td>3.42</td>
<td>0.70</td>
</tr>
<tr>
<td>M04</td>
<td>3.35</td>
<td>0.69</td>
</tr>
<tr>
<td>M01</td>
<td>3.12</td>
<td>0.82</td>
</tr>
<tr>
<td>M03</td>
<td>3.08</td>
<td>0.93</td>
</tr>
<tr>
<td>M13</td>
<td>3.27</td>
<td>0.78</td>
</tr>
<tr>
<td>M12</td>
<td>2.85</td>
<td>0.97</td>
</tr>
<tr>
<td>M09</td>
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