Open and Closed Innovation within a Corporate Setting:

A comparative Case Study

DIPLOMARBEIT

zur Erlangung des akademischen Grades

Diplom-Ingenieurin

im Rahmen des Studiums

Wirtschaftsingenieurwesen Informatik

eingereicht von

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an der
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Wien, 15.05.2014

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(Milica Šundić)

Danksagung

An dieser Stelle möchte ich mich bei all jenen bedanken, die durch ihre fachliche und persönliche Unterstützung zur Entstehung dieser Diplomarbeit beigetragen haben.

Mein Dank gilt insbesondere den Ansprechpartnern aus A1 Telekom Austria für ihre Beteiligung an der Fallstudie, meiner Familie für Ihre Unterstützung, so wie Univ.-Lektor PD Dr. Karl-Heinz Leitner für die wissenschaftliche Betreuung.

Abstract

Ideation or idea generation techniques can be applied in various approaches to support innovation processes. These techniques can be executed traditionally in closed workshops and brainstorming sessions, or by implementing open innovation and innovation toolkits, thus allowing the ideation process to be distributed across distances. The involvement of external potential idea-providers or problem solvers opens up possibilities for drawing on existing knowledge or transferring scientific and technological best-practice from different fields to provide ideas and solutions to other problems. Particularly in corporate settings in dynamic and emerging industries, innovation seems necessary, and both closed and open innovation approaches are applied. In literature, benefits and drawbacks of both traditional, closed innovation processes and open innovation methods are studied. However, studies that investigate the movement towards open innovation in companies and compare the potential of ideas from closed and open innovation within companies are rare. This thesis studies the process towards open innovation based on a corporate example and compares the closed, 'offline' innovation process with the open, 'online' approach which is supported by ICT-tools and a crowdsourcing community.

Ideengenerierungstechniken können vielseitig zur Unterstützung eines Innovationsprozesses eingesetzt werden. Dabei kann Ideengenerierung einerseits traditionell in geschlossenen Workshops oder Brainstorming-Sitzungen erfolgen - oder durch die Implementierung von Open Innovation Methoden und Tools, mit welchen der Prozess zur Ideenfindung über den geschlossenen Rahmen hinaus ausgeweitet wird. Durch die Integration von externen Ideengebern bzw. Problemlösern können neue Ideen, ebenso wie bestehende, wissenschaftliche bzw. technologische Lösungsansätze aus angrenzenden oder fremden Branchen für Lösungen herangezogen werden. Innovation ist insbesondere für Unternehmen in dynamischen und aufstrebenden Industrien notwendig, und sowohl traditionelle (closed), als auch offene (open) Innovationsmethoden werden angewendet. In der Literatur wurden die Vor- und Nachteile der traditionellen, geschlossenen Innovationsprozesse gegenüber Open Innovation Methoden vielfach untersucht. Studien, die sich mit der Öffnung der Unternehmen hinsichtlich Open Innovation befassen, oder vergleichende Studien, die das Potenzial von Ideen aus geschlossenen und offenen Innovationsprozessen in Unternehmen untersuchen sind jedoch noch rar. Diese Diplomarbeit untersucht daher den Prozess hin zu Open Innovation am Beispiel eines Unternehmens und vergleicht den traditionellen, 'offline' Innovationsprozess mit dem offenen, 'online' Ansatz, welcher durch IKT-Tools und einer Crowdsourcing-Community unterstützt wird.

Keywords: *crowdsourcing; innovation communities; ideation; social media*

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1   Introduction

Traditionally, innovation processes were conducted in the internal research and development departments inside of mostly large companies. Henry Chesbrough (2003) called upon companies to open the boundaries and incorporate external workforce or outsource the innovation process instead of conducing it exclusively inside the company. Also, the globalization and the increasing transparency of business processes through the Internet eventually required new and innovative forms of business. One possible response to these requirements is the opening of the corporate boundaries and thus involving customers in the business processes. Therefore, companies increasingly search for diverse cooperation forms with suppliers, retailers, research institutions, customers, competitors or start-ups, e.g. by co-creating ideas and concepts for new products and services.

From a business perspective, innovation activities have gained an important role in the last few years: *"[...] companies that don't innovate die*" (Chesbrough, 2003). Studies show that innovating companies are able to generate profits and thus can achieve growth and a stronger market positions. Among the motivation factors for the integration of customers into the innovation process is the chance to develop ideas *"faster, more effective and cost-effective"*, as argued by Gassmann (2010)[1].

Both the Internet as known in its original form as a passive information medium before 'Web 2.0', as well as the relationship between consumers and companies has changed rapidly during the past years. Apparently, the Internet has transformed into an interactive platform with users that actively provide content and shape the world wide web. The new web has fostered the involvement of customers and other partners - the so called *'prosumers'* - into various business processes, such as marketing, testing, product development, as well as innovation management. As often argued in literature, companies increasingly initiate communication and review processes with their current and future customers and involve them already in early stages of the innovation process. Nowadays, innovation processes are often carried out externally, for example in crowdsourcing communities or innovation platforms, e.g. based on the approach of *'crowd wisdom'* (Surowiecki, 2004) or interactive *'innovation tool-kits'* (von Hippel, 2001), in various forms of *'idea contests'* (Bullinger and Möslein, 2010; Adamczyk et al., 2011) or *'idea tournaments'* (Terwiesch and Ulrich, 2009).

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[1] Adapted from Gassmann (2010), p. 25: *"Die Problemlösung ist zumindest in der Ideen- und Konzeptphase in aller Regel deutlich schneller, effektiver und kostengünstiger als das interne Schmoren in eigenen Saft."*

Ideation and idea contests in particular can be applied for generating and reviewing ideas efficiently in early stages of the innovation process. This process involves multiple stages, such as: idea generation, evaluation, selection of the best idea, awarding – and because of its complexity and high time and effort consumption, a structured process setup is a must. Based on the Open Innovation paradigm (Chesbrough, 2003), *crowdsourcing* –coined by Jeff Howe in an article in Wired magazine (Howe, 2006)– refers to the outsourcing of the innovation process or innovation tasks usually performed within a company to a crowd of people outside the institution. In literature, there is a number of open innovation models, such as *outsourcing*, *open source innovation* or *crowdsourcing* (Marjanovic et al., 2012). This thesis focuses on crowdsourcing and web platforms with content available to an open audience (e.g. to a crowd on the internet), focusing on innovation and idea generation by potential users or customers.

In order to investigate the output of both traditional, closed innovation activities and open, crowd-based innovation methods within a large, innovative company, this thesis studies the innovation management activities based on the example of A1 Telekom Austria, Austria's largest telecommunication provider and compares the internal 'offline', workshop-based ideation with the 'online' approach which is supported by ICT[2]-tools and a crowdsourcing community of employees and customers.

1.1   Motivation

Taking the lead in advanced technologies usually requires innovation, and in turn, this requires tools and methods that can cope with the high dynamics and flexibility of the innovation process. Crowdsourcing is related to the philosophy of *peer production or* open source development and strongly involves co-creation activities enabled by a web-based innovation platform. In return for their participation, crowdsourcees are usually compensated by monetary and non-monetary awards. Crowdsourcing can be deployed when the issues are too high-risk or too costly to be addressed in-house in a company, or need more flexibility on the one side. On the other side, crowdsourcing suits issues that cannot be answered with (only) one correct solution, but many collaborated ideas and uncertain solutions might lead to a right direction.

The notion of crowdsourcing –as an open innovation model– has gained increased popularity over the past few years: the keyword "*crowdsourcing*" reached up to 11.700.000 hits in less than 0,13 seconds in May 2013[3] - compared to 6.800.000 hits in August 2010[4], and

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[2] ICT ... Information and Communication Technology
[3] Reference: http://www.google.at/#q=crowdsourcing, Date: 06.05.2013
[4] Reference: http://www.google.at/#q=crowdsourcing, Date: 15.08.2010

1.340.000 hits in June 2009[5] (Papsdorf, 2009). The regional interest is not limited to the North American region as assumed, but also in Austria, Switzerland and Germany it seems to be a prominent keyword (see: Figure 1) and a grown business model.
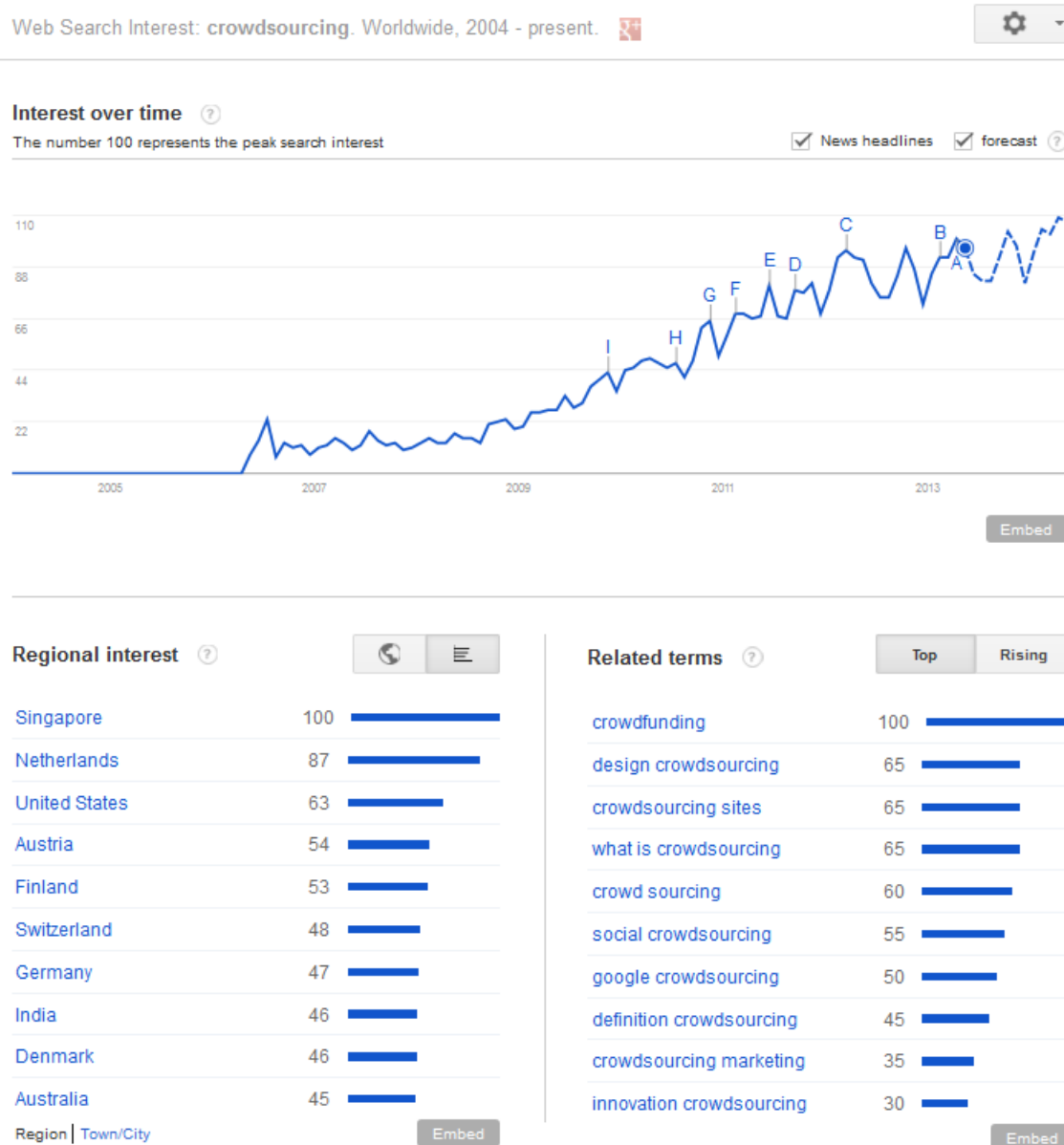
Figure 1: Crowdsourcing interest over time (Google Trends, 2013)[6]

Crowdsourcing has shown potential in the field of innovation strategies and new business models. However, such forms of online collectivism tend to overrule individual, authentic knowledge. Bill Gates has noted that:

> "*The incentives for knowledge producers are disappearing in a world where individuals can pool their talents to create free goods that compete with proprietary marketplace offerings*" (Tapscott and Williams, 2006).

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[5] Source: (Papsdorf, 2009), Referenced date: 11.06.2009
[6] Source: http://www.google.com/trends?q=crowdsourcing, Date: 06.05.2013

The crowd is usually encouraged to participate through financial incentives, or non-monetary rewards, in order to manage the appropriation of intellectual property, which is among the high risks of crowdsourcing. Current literature studies focus on analyzing such examples of crowdsourcing and idea-contests where financial incentives or rewards are particularly provided to the crowd. However, the approach is often criticized as it may lead to controversial or exploitative labor market practices, as seen on the Amazon Mechanical Turk and other *'micro-job'* platforms. Increasingly, organizers of idea-contests and providers of innovation communities provide a clear definition of terms and conditions of engagement to the participants and offer financial compensation mechanisms to mitigate a risk of losing participants. According to Howe (2008), this issue is stated as a *"risk of un(der)payment"*.

From a business perspective, it is crucial to provide the right incentives and intrinsic motivators, e.g. by addressing and motivating a large group of participants over a longer period. By maintaining the dynamics and diversity in such communities, the number of good ideas can be increased. Therefore, this thesis studies the output of idea generation processes and compares the traditional in-company innovation process with formally involved innovators with the crowd-based innovation approach with external, voluntary participants.

1.2   Expected Results

Crowdsourcing has gained increased popularity and has also shown potential in terms of a business model. Since its implications are still unknown, understanding the benefits, opportunities and limitations of crowdsourcing is still difficult. Both theoretical investigations and frameworks as well as empirical evidence are needed to provide implications for innovation policy makers and crowdsourcing practitioners. Therefore, this master thesis aims to empirically analyze how and why crowdsourcing works, and how sustainable it is. Since implementations of crowdsourcing and co-creation are rising, this thesis shall point out the effects of collaborative innovation processes.

The theoretical background in the first part of the thesis includes a literature review on the context shift towards open innovation, including crowd-based innovation methods, user-innovation and co-creation, social media and user-generated content, as well as online (innovation) communities in particular.

In order to investigate the described context, an empirical study is performed. The second part of the thesis includes the research framework, arguments as well as the research questions for the case study that are derived from the literature review.

The following steps are applied:

1) Perform an empirical study including three idea generation processes in A1 Telekom Austria:

- Internal offline co-creation with employees,

- Internal online (tool-based) co-creation with employees; as well as

- Co-creation with customers including the Idea contest *'Mein A1 einfach machen'* that was hosted in the public crowdsourcing platform.

2) Explore the results, i.e. which factors influence the participation of the crowd to contribute to collective collaboration and how to endorse crowdsourcing over a longer time period?

This study includes data provided by A1 Telekom Austria AG. In particular, the three types of open innovation implementations are studied and compared. In order to investigate the processes, participants and roles, review- and selection criteria, idea-generation methods and the influence of social media, the study includes the following research questions:

(1) What is the impact of the level of specificity of the submission criteria on the commercial feasibility of the ideas?

(2) Do individual characteristics of idea-creators (opinion leaders or lead users) influence the likelihood of idea selection?

(3) What is the difference of social media tools in supporting co-creation activities within the three studied approaches?

This master thesis will focus on innovation processes that are based on *'crowd-wisdom'*, collective idea generation techniques and web-platforms that can be implemented and applied across various engineering disciplines. The main focus is on particular crowdsourcing tools that can accompany product development, and hence allow the involvement of external actors in the process. The consequences of open innovation platforms shall be analyzed from the social, economic and engineering perspective.

1.3   Structure of the Thesis

As the innovation settings shift from closed to open, the process of innovation must change as well. A number of literature insights that result from this new view of innovation will be presented and discussed in this thesis. This includes the emerging (management) challenges when shifting towards new, interactive business models; new innovation strategies and adaptations to corporate policies; as well as the rise of user-driven-content, online communities and social network platforms.

Chapter 2 explores the shift towards open business models. This gives rise to a key insight: the interactive approaches which combine several players and foster knowledge exchange between the players suggest some very different organizing principles for research and innovation. Nowadays, useful knowledge has become widely diffused and former big players that have led the industry and the global economy with their discoveries have opened up, engaged in spin-offs and start-ups or university research centers. Hence, the distribution of knowledge has spilled out from corporate boundaries, resulting in experiences and best-practice exchanged and distributed between companies, customers, suppliers, academic institutions, entrepreneurs and start-ups. The second chapter focuses on the implementation of open innovation within a company and turning customers into co-creators within the product development process. By the end of this chapter, the main challenges in the Open Innovation process are explained, such as getting the organization and people ready, picking the right crowd, establishing a platform and a community base and setting up the framework to make co-creation i.e. crowdsourcing work.

Chapter 3 calls for a new vision of the innovation process based on crowdsourcing and describes the integration of customers as co-creators. Since crowdsourcing is moving into the mainstream, this chapter includes the basic rules for choosing the appropriate form of crowdsourcing or supporting technologies for a given innovation setting. Further, this chapter includes arguments for maintaining the dynamics, diversity and openness of crowdsourcing by addressing a large group of different participants over a long period as well as providing the right motivation and incentivation-systems and identifying lead users and motivating them to share their ideas. The chapter and concludes with a discussion of open, semi-open and closed community approaches.

Besides arranging and organizing the innovation process internally, building up a strong community base of external customers, as well using external marketing and public relation tools is as crucial and can be strongly supported by social media and web 2.0 features.

Chapter 4 starts with a definition of Social Media in general and it's categorizations. Further, social media frameworks are analyzed in terms of structures and user behavior in online communities. Eventually, organizational social media as well as innovation communities and social networks are discussed in this chapter.

Online communities, user-generated content and social media are drawing increasing interest from the academic and industry in developing new theories and technologies to understand user-behavior and structures of social networks as well as extracting knowledge from the user-generated content and social media. Hence, *Chapter 5* includes the research framework and questions that were designed for the case study. Eventually, a perspective on applying crowdsourcing and social media from a telecommunication provider's perspective is provided. The case includes A1 Telekom Austria's both traditional and online internal approaches, as well as the external social support program that was launched in 2011 including crowdsourcing and social media activities. This chapter concludes with the main results of the studied data. In particular, the contextual setup of the co-creation processes as well as the impact of lead users, idea seekers and other participants are discussed in detail.

A summary of the thesis, as well as conclusions and further relevant problem statements that cannot be analyzed within the scope of the thesis are summarized in *Chapter 6*.

2 Towards Open Innovation

Information technology and the Internet play an increasingly important role in traditional engineering disciplines, especially when the innovation process methodology is considered. Thus, the development and use of technical support systems – not only in product development, but also as IT tools or as (web-based) collaboration platforms – have become indispensable in various engineering disciplines. It is therefore expected and partially proven that public and private industry sectors, governments and other authorities place attention on understanding the optimized, interactive and effective innovation process approach. Various industries strive towards open idea sharing and community sites. Open Innovation Models, such as Crowdsourcing, are generally enabled by the web, thus they are spread across disciplines and sectors, and provide a quick and cost-effective development and implementation of creative, –open– solutions to innovation challenges.

This chapter therefore focuses on the challenges that corporate face when turning their innovation process into an Open Innovation business model. First, Closed Innovation is discussed in section 2.1, followed by Open Innovation and its' contrasting principles and benefits to Closed Innovation in section 2.2 and section 2.3. The second part of this chapter focuses on the challenges in managing the Open Innovation process and preparing the internal organization for Open Innovation in section 2.4, up to managing a public user-community, e.g. on a crowdsourcing-based Open Innovation web-platform in section 2.5.

2.1 Closed Innovation

Traditional innovation (management) approaches assume that new technical solutions are first invented in closed fields of research and tested for feasibility before they are produced and eventually spread on the market (Faber, 2008; Hauschildt and Salomo, 2007). This linear approach is described by representative examples of Schumpeter (1983) and Cooper (2010) in this section. As a pioneer of innovation science, Joseph A. Schumpeter has coined the definition of innovation in literature as well as the traditional innovation model. His theory of economic development and the linear phase model have been discussed numerous times in literature, as well as applied or adapted to determine regulated control measures for innovation processes in companies. Robert G. Cooper's 'Stage-Gate-Model' (Cooper, 2010) is a conceptual and operational model for new products, and can be used for procedural control of the innovation and product development.

This model is still frequently used to organize innovation processes across industries, particularly in the area of software development or productions.

In his early work, Schumpeter has pursued the "Entrepreneur" approach and defined this role within companies. He was convinced that innovations are developed and created within companies, i.e. in a closed form, and always origin from an Entrepreneur - a dedicated innovator within the company. The Entrepreneur is described as an individualist, who enforces *new combinations*, changes to the market through *'creative disruptions'* or can move the market into an imbalance (Schumpeter, 1983). In his later work, Schumpeter favored large, influential companies as main innovators. He recognized potential for innovation particularly in the research and development departments, since these can develop novel ideas but also rationalize the innovation process, as well as strongly influence the product development. Hereby, innovations are developed in a *routine process*.
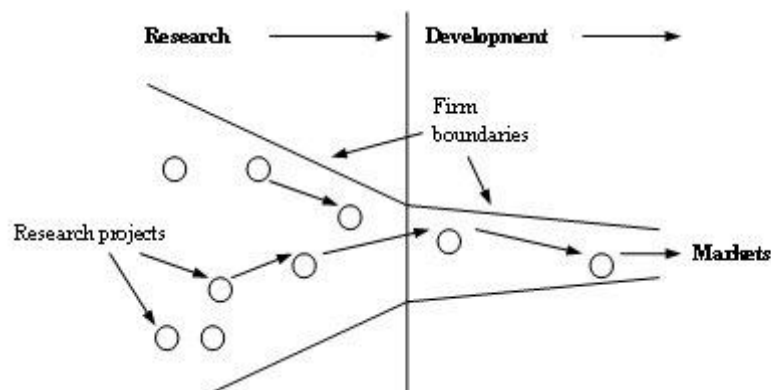
Figure 2: Closed Innovation (Chesbrough, 2003)

As illustrated in Figure 2, within the traditional approach, the ideas remain in the internal research and development departments without leaving the firm boundaries. Companies keep their newly developed ideas and products internally until they can be presented on the market. According to Schumpeter (1983), successful innovations are driven solely by internal development and marketing activities, whereby the innovation process can be best managed and controlled. Schumpeter's model is based a formal description of an *invention*, *innovation* and its *diffusion*. Hence, this model primarily influences the (late) diffusion phase of an economic development. Therefore, a drawback of this linear model is the lack of interfaces and communication between different phases of the innovation process. Compared to this, Cooper's Stage-Gate-Model arranges and controls the innovation progress by introducing regular intervals and check points.

Cooper describes innovations as *processes*, and emphasizes the following requirements for the Stage-Gate process:

(1) The process of new products has to be a quality process. Consequently, a systematic process must track the product from the initial idea up to the market entry.

(2) The process must be able to deal with risks, including a structured framework with defined sections and most suitable milestones - i.e. *'Gates'*.

(3) The process gates have a central role and define the tasks and goals, as well as the next steps.

(4) The process is accelerated by parallel actions and is performed multi-functionally.

(5) The process requires a **cross-functional team** with an authoritative team leader who takes responsibility.

(6) The process is entirely customer-oriented.

(7) Clearly defined and systematic task deadlines are crucial for the success of a process.

(8) Products are offered in a superior and differentiated manner with a clear value proposition.

Based on these criteria, Cooper developed the Stage-Gate principle to introduce new products more effectively and efficiently to the market, as well as to increase their probability and their success (i.e. fit-to-market).
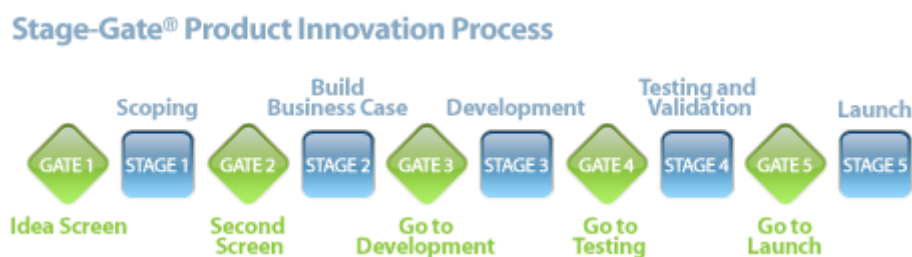
Figure 3: Stage Gate Innovation Process (Stage-Gate Process, 2007)

As illustrated in Figure 3, the innovation is divided into separated phases or sections. A typical innovation process is typically composed of five phases, which Cooper coined as '*Stages*'.

The stages are structured across divisions and include tasks that are carried out by cross-functional or multi-disciplinary teams:

0) *Discovery*: this pre-phase includes the discovery and generation of new ideas.

1) *Scoping*: the first phase involves the scope settings for new ideas, as well as preliminary analyses of the development process.

2) *Build Business Case*: the second phase includes the first market-related and technical analyses that arise from the first research. Further, formal definitions of the project framework as well as the project plan are determined in this phase.

3) *Development*: in the third phase includes the elaborated, detailed design, the developed product, as well as the determined implementation and production of the developed product.

4) *Testing and Validation*: the test phase follows the development phase and includes the first product tests before it is released to the market.

5) *Launch*: productions, as well as sales and marketing eventually start in this phase.

Each stage is followed by a critical decision point - a *Gate*. At each gate, the team comes together to decide on the further course of the process as well as to perform a quality check. On the one side, the status of the previous activities is presented by the team using checklists, and on the other side, further decisions on the further course of the process are made: *'go', 'hold', 'do not go'* or *'recycle'*, i.e. repeat a section. Decision points include an approved action plan for the next section, approved financial budgets, as well and eventually a detailed list of activities for the next phase of the process.

As already mentioned, the Stage-Gate-Model fosters an efficient organization of product development and clear insights into the process stages. A further advantage is the transparent cost control, as well as the mature risk management. Within this approach, each project can be evaluated in regular intervals or cancelled if that is necessary. In contrast to this, the strict linear process flow as described by Schumpeter requires a clear vision and a process plan at the beginning of a process and might lead to inappropriate decisions or neglect ideation and creativity aspects, i.e. the so called *'out-of-the-box thinking'*.

Both Schumpeter's and Cooper's approach are based on the traditional, closed innovation paradigm and describe the innovation processes and outcomes in an outdated way. In fact, the increasing need for integration of customers and end-users into the innovation process has led to new, interactive co-creation methods. Unsurprisingly, literature studies on innovation management predominantly include research questions on co-operation or co-

creation with external partners. Such modern and interactive approaches extend the internal perspective and combine the innovation activities into a result of (loosely) coordinated, open networks among a large number of actors. The rise of Open Innovation and the emergence of such interactive methods is discussed in the next section.

2.2   The Rise of Open Innovation

During the last years of the twentieth century, several economic and technologic factors combined to "erode the underpinnings of closed innovation" (Chesbrough, 2003). Among the factors was the growing mobility of highly experienced and skilled people and the transfer of knowledge among companies when people passed their knowledge on to new employers when leaving a company after working there for many years. The growing number of skilled and highly educated people allowed a spill-out of knowledge from silos of internal corporate research labs out to companies of all sizes and industries. The fact that supported this situation was the growing number of venture capitals that specialized into commercializing external research and converting them into growing and valuable companies. Such start-ups have grown into perceptible competitors for large, established firms that had formerly financed most of the research and development in the industry.

A turn-around was about to happen: the new ideas these newly formed companies have implemented were successful and outrunning the former industry leaders, which were still focusing on the internal research and development process.

Chesbrough (2003) argues that perhaps the most important factor for the challenges in closed innovation was the strongly decreasing time-to-market for many products and services, making the lifecycle of many technologies shorter than ever. Further, many international players, suppliers, partners or even customers with an increasing knowledge challenged the companies. These impacts on the industry, assumptions that once made closed innovation an effective approach were no longer applicable or disregarded.

Referring to closed innovation settings - as shown in Figure 4, fundamental technology breakthroughs either led to increased sales and profits and therefore to increased investments into research and development, or opened another "outside option" for scientists and engineers, which would allow them to commercialize the breakthrough on their own, e.g. as a start-up company. If that new company hadn't failed (shown as Rest in Peace (RIP) in the figure), it would generally not invest into new fundamental discoveries based on research and development, but instead, it would look outside for other commercial technologies. This outside path broke the virtuous circle: on the one side, the company that originally invested

into research and development and funded the breakthrough didn't profit from its' investment, and on the other side, the company that did profit from the breakthrough generally did not reinvest into the next generation of research. This concludes that there would not be another round of investment into basic, discovery-oriented research, and thus, that closed innovation was no longer sustainable. In these situations, the new approach -Open Innovation- coined by Henry Chesbrough (2003) was emerging.

The Virtuous Circle Broken
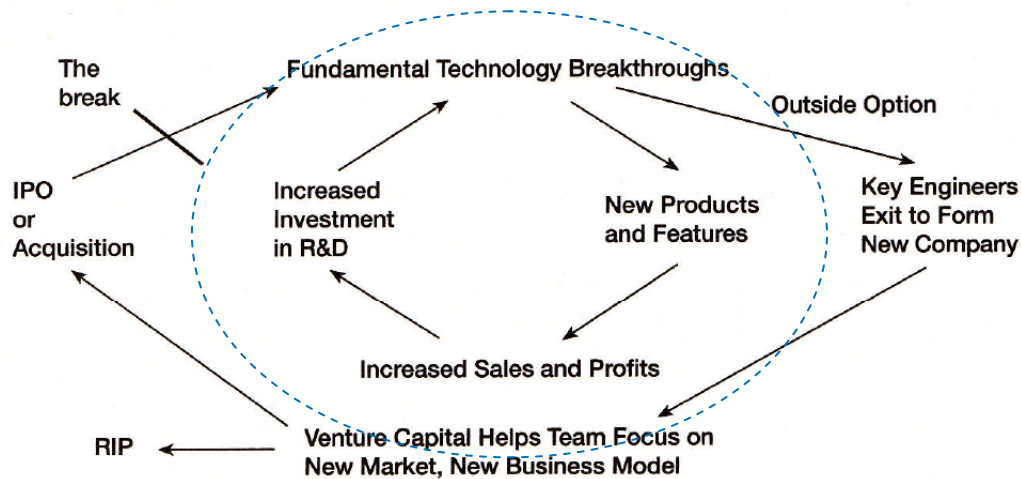
Figure 4: The Virtuous Circle of Closed Innovation (Chesbrough, 2003)

Within the Open Innovation model, ideas originate from inside of a firm's internal research process and can be externalized before being launched on the market. Some of the ideas seep out either at an early research stage, or in a later development stage - by outsourcing them to external suppliers and partners, or perhaps they seep into a start-up which was formed by some of the employees. The essential aim is to take the ideas outside of the current firms' business in order to generate additional value, or the other way around - to look for potential valuable ideas outside of the company's boundaries. As described by Thrift (2006):

> *"Similarly, 'open innovation' cannot be seen only as one of the next big management fads but also as a means of challenging current property regimes by building new kinds of creative commons through a wider culture of knowledge. In other words, some commentators argue that a democratization of innovation* [von Hippel, 2005] *is occurring [...] and not just corporate welfare* (Thrift, 2006).

Formerly, the process of product development has been highly closed and only a few people inside of the organization were involved. The formerly closed organizations were enriched with new external knowledge which was brought in by employees from related industries, or

by collaborations. One of the possibilities to acquire new knowledge cost-efficiently is to integrate customers into the innovation process, e.g. as defined within the *'user innovation'* approach by von Hippel (2005), *'mass customization'* by Alvin Toffler (Radder and Louw, 1999) or other interactive forms of *'value creation'* (Reichwald and Piller, 2009). The approach by Heiskanen et al. (2007) that *"a more open-ended approach [...] encouraging users to evaluate concepts more critically"* may also lead to lower barriers for consumers to adopting new innovations .

Not so long ago, major technological innovations were mostly launched by large-scale industry operators. Thereby, a group of scientists or researchers worked meticulously in a well equipped laboratory setting and refined inventions by developing new or expanding the capabilities of already existing products. However, only if the products or services showed success after testing them in the closed system, they would be produced in large scales and offered on the market, with no ensured profitability on the market so far. The following section points out some of the main contrasting principles of Closed and Open Innovation.

2.3   Benefits of Open Innovation

In contrast to the traditional approach, the new, interactive approach is used to accelerate innovation by means of openness, as it heavily relies on distributed knowledge flowing in and out of a company. The underlying business principle behind this openness is that today's companies can not only rely on their own knowledge and research, but need to use external intellectual property when it advances the business model. Openness increasingly helps to gather many more ideas and skills from external experts than it would be possible with a closed approach. Traditional closed innovation principles however focus to the company itself and the internal, restricted pathways to the market (Chesbrough, 2003).

In reference to Gassmann and Enkel (2004), *"open innovation can be summarized as an approach that enriches companies' innovativeness, but is also limited to companies with special products or industry characteristics".* Industries with modular products and short product lifecycles - such as technology and service providers - require high speed product development and can particularly score or advance their market positioning through exchanging knowledge and ideas in co-creation processes with external partners.

Innovative industries or companies are not only predestined to constantly increase their innovativeness, but also to reach increasing returns, such as gaining a higher value of an innovation through increasing the critical number of potential customers. Hereby, involving

external partners and co-operations can positively influence the size of the customer base, and eventually it can also positively influence a technology: *"In order to develop a dominant design as well as to set standards, it is crucial to multiply the linkage to partners with an open innovation approach."* (Gassmann and Enkel, 2004).

Open Innovation and the process of active customer-involvement can be profitable in different matters, in terms of: reducing the *cost-to-market*, accelerating the *time-to-market*, increasing the product-acceptance on the market (*fit-to-market*) or creating new revenue streams (*new-to-market*) for a company (Reichwald et al., 2007).

Reducing the incidental costs of research and development, including all expenses, starting from the initial planning of a product, up to its launch on the market, can increase the profitability of a product and ensure a long-term growth for the business model. Further, outsourcing the usually cost-and resource-intensive research and development process to external players and customers leads to efficient cost savings. Due to the decreasing product lifecycles on the market, companies are forced to keep the internal development lifecycles of products as short as possible. Companies that are able to introduce and launch their products ahead of the competition can benefit among others with high initial market shares and a setting of market entry barriers for the followers and adopters. Furthermore, if a product that was launched on the market is exclusively first of its kind, customers are willing to pay more.

Customers should be involved into innovation and other interactive activities where implicit customer knowledge is required, e.g. test runs and trials, or any other kind of customer feedback. This way the trial-and-error process of problem solving and product development, which is usually carried out in a dialogue between the company and its' customers, can be outsourced to the customers holistically at an early stage in order to reduce the review loops and expensive product re-arrangements at a mature stage.

Traditionally, needs are generated by users, while solutions reside on the producers' site - as they search for users' needs to incorporate these into the new or existing products (Bogers et al., 2010). By systematically integrating the customers into a product development process, major information about their needs (the "What?") as well as possible solutions (the "How?") can be determined. By meeting the customers' needs, the acceptance of products on the market - the fit-to-market - and the inclination towards products and brands are positively influenced. For example, integrating opinion leaders and experts like *Lead Users* into the early stage of development process can foster new ideas and solutions. Addressing and involving these particular users is crucial even in the late phases of product development,

because they could support the product promotion with their strong influence or a positive attitude towards the brand of a company.

Companies often develop incremental innovations based on existing knowledge or proven technologies, which lowers the level of novelty. Radical innovations do have a greater impact, but also a higher risk of not meeting the customers' true needs. Hence, through active customer integration and combination of information about needs and possible solutions (the "What?" and "How?"), radical innovations can be performed as well.

Eventually, setting up a (loyal) **customer community** can provide competitive advantage and assured profits during challenging economic times. In reference to Chesbrough's paradigm: *"open innovation allows organizations to simultaneously expand their breadth of ideas, opportunities, and know-how while minimizing the technical and market risks associated with innovation"* (Forbes Magazine, 2012). From an economic perspective, external as well as new internal ideas can adhere to current business models or even foster business model innovations in response to the business, technologies or marketplace changes.

Carrero (2009) argues that innovation can happen in two major forms: it can rise as a (technology) breakthrough, or as a result of combining approved technologies, methods or products in a valuable market sense. HP and many other companies are aware that internal employees and specialists *"alongside a customer base"* can develop solutions and ideas to solve current challenges and recognize future opportunities and customers' needs. Preferably open innovation is perceived as a faster and better innovation method than linear approaches. In order to gain positive effects in customer-integration in the innovation process, it is important to address the right customers. Therefore it is crucial to determine the right rewards and incentives that motivate customers to participate in the innovation activities. In the following sections, these will be discussed.

2.4   Implementing Open Innovation

Based on the rising costs for research and development, as well as shorter product lifecycles (as shown in Figure 5, left side), companies are forced to strongly reduce budgets for uncertain investments, such as innovation activities. In such cases, an open innovation model is one of the keys to successful collaboration within companies, partners or customers. Companies that are willing to open their boundaries and adapt business models can profit from advantages of open innovation that result in leveraged costs and risks research and early-stage development (Chesbrough, 2007).
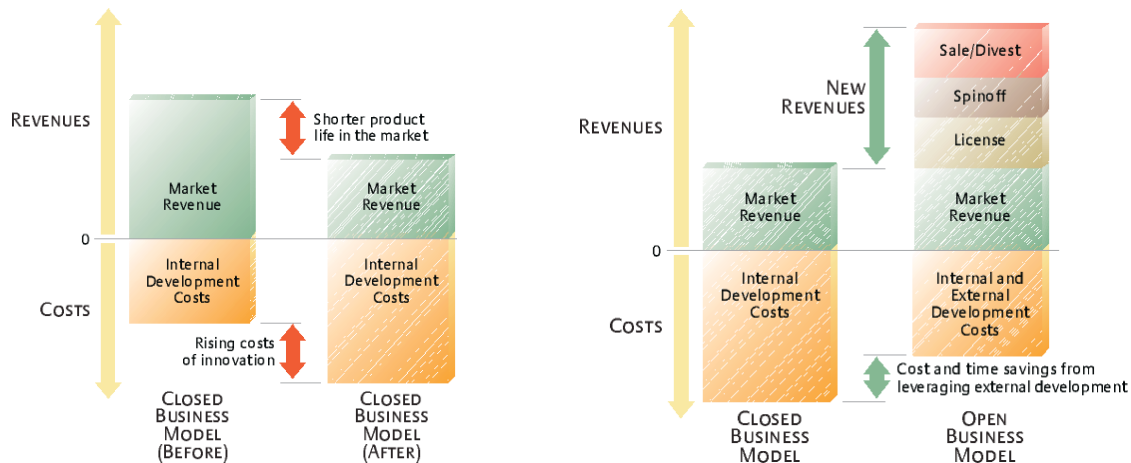
Figure 5: Why companies should have Open Business Models (Chesbrough, 2007)[7]

According to Chesbrough (2007), companies *"need to develop the ability to experiment with their business models* [which] *requires the creation of processes for conducting experiments and for assessing their results"*. Apparently, many companies still follow organizational structures in which business unit managers tend to think in short terms and 'quick wins', merely running into risky innovation activities with uncertain results at a high priority. As discussed by Bröring and Herzog (2008), companies often have limited resources to embed innovation activities into the organization, which often leads to undercutting innovation processes. In order to optimize business processes, companies tend to focus on their (present) internal issues and may not manage to join (future) opportunities or technologies that are needed for a competitive position on the market.

When applying open business models, *"it's important to be able to retain an open attitude that embraces how people and organizations can collectively solve a problem, rather than squabbling over how to split the potential reward"* (Carrero, 2009). As shown in Figure 5 (right side), the cost and time savings from leveraging external development can be supplemented by new revenues and other income streams, again resulting in *"economically attractive"* innovation, even with shorter product lifecycles (Chesbrough, 2007).

Open innovation can be extremely valuable and a source of significant competitive advantage, but it needs to be crafted based on the organization's structure, size, culture, hiring practices and other factors. According to Soni (2008): *"necessary enablers of innovation could be grossly categorized into People, Process and Technology"*. However, besides a strong supporting culture and strategic intent within a company, external

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[7] Left side: Economic Pressures on Innovation, right side: The New Business Model of Open Innovation
Source: http://sloanreview.mit.edu/article/why-companies-should-have-open-business-models/,
adapted from Chesbrough (2007).

technology enablers as well as *innovation catalysts* play an important role in the implementation of open innovation:

- *Technology Enablers* are tools and platforms that enable creation and collaboration within groups or crowds, such as Jazz, Wiki, Open Source, etc. and can be applied within or between companies.

- *Innovation Catalysts* are platforms or firms that connect a company (i.e. a problem statement) with a large crowd of potential solvers or innovators, such as InnoCentive, NineSigma, or Yet2.com.

There are many ways of putting open innovation principles into practice. Some certain types of open innovation implementations may violate company policies; undermine important elements of the organization's culture or turn out to be a 'poor fit' for other reasons. Therefore, instead of forcing the implementation of open innovation in general, it is better to create a tailored program that integrates the implementations that are best suited to a company or a specific business unit. In particular, Julian Keith Loren (Sloane, 2011) speaks of eight possible implementations of open innovation, reaching from externally assigned paid programs, educational i.e. campus, or hybrid models, customer partnerships, pathway programs as ecosystems or internal bridges, as well as crowdsourcing programs. Crowdsourcing is a powerful but also very complex tool which is highlighted in this thesis. Possible implementations of crowdsourcing are therefore further described in Chapter 3.

The following characteristics of open innovation are noted as of high importance:

- Open innovation may require changes to the organizational structure or existing design practices within the co-creation with customers.

- Some cultural elements strongly impact the success and effectiveness of open innovation programs. For example, open-mindedness and flexibility will allow and generate a higher value.

- Open Innovation doesn't need to be implemented everywhere in an organization at the same moment. It is possible to start off with a pilot in single divisions or departments, establish a track record of success and then spread the approach to other departments or divisions.

Open Innovation should be part of any company's innovation toolkit and choosing the best implementation type involves some choices on appropriate structures and efforts. The following sections describe some major internal issues when implementing open innovation

within a company, such as building a collaborative environment, picking the right departments and involving the right people.

2.4.1   Organizational challenges

The implementation of Open Innovation within a company not only refers to a group or crowd of people outside of the organization to support the innovation efforts, but also involves the work that must be done within a company to prepare, receive and utilize ideas from outside. Engaging in Open Innovation therefore must be approached in a *"holistic and strategic manner"* (Braden Kelley in: Sloane, 2011).

Open innovation is often treated like an extension of the research and development department although it should be treated as an extension or the marketing department (Braden Kelley in: Sloane, 2011). For many years, open innovation has been described as the outsourcing of internal research and development activities. Recently, new concepts and methods, such as crowdsourcing, have been developed and are beginning to replace traditional marketing tools to identify new customer and technology trends or potential market channels. Hereby, marketing departments may foster organization's connections with external actors, such as customers, researchers, suppliers and other stakeholders. Kelley identifies two main reasons for open innovation in the domain of marketing: *"1. Marketing specializes in bringing new solution offerings to market* [and] *2. Marketing specializes in crafting and optimizing external communications"* (in: Sloane, 2011). Involving the marketing department in the innovation efforts or communications and presentations is therefore vital.

Innovation is social; it usually happens in teams in organizations and is not done by sole inventors. In particular, the activity of transforming ideas and useful intentions into valuable solutions is very social and requires a team that will work on proposals and suggestions and involve their own experience and ideas. Therefore, by involving an interdisciplinary team of innovators, on the one side, ideas and suggestions can reach the right people (i.e. engineers or specialists) that will analyze and prove the feasibility of the ideas; and on the other side people that will "*help solve the most difficult challenges, and help break down internal barriers within the organization — all in support of creating a better solution"* (Braden Kelley in: Sloane, 2011). It is clear that innovation activities must be supported by various departments or divisions.

Probably the easiest way to introduce innovation activities in an organization is to install manual or electronic suggestion boxes that are open to anybody, without following a strategic or structured groundwork. This approach is most likely to fail. Also, posting a question to an

innovation intermediary such as Innocentive without following a clear vision, strategy and goals or preparation activities to receive the submitted ideas, will most likely fail. It is clear that Open Innovation must follow a measured, strategic approach which matches the vision, strategy and goals, and is agreed with the pre-existing innovation activities in the organization.

As already mentioned, innovation activities - in particular an Open Innovation approach - should involve various efforts and departments within an organization, such as:

- Communicational efforts:

Marketing department targets and communicates with the intended audience and evaluates market opportunities for ideas in a later stage. *Public Relations* department then broadcasts the results through appropriate news sources and online media. Sometimes this task is done by *External Communication* or *Marketing* department.

- Operational efforts:

Research-and-Development department establishes teams to evaluate technical feasibility of the proposed solutions and complete or combine solutions. *Operations* department then evaluates the abilities to manufacture the proposed solutions and supports with production cost estimations, etc.

- Supporting efforts:

To support the innovation efforts, *Finance* department assists by conducting financial market projections, budgets, capital, or metrics. *Human Resource* department ensures that employees can participate in the innovation activities, e.g. as idea submitters, reviewers, or developers, and staff the chosen innovation development projects, departments or divisions. Eventually, *Legal* department creates appropriate partnership and intellectual property ownership agreements.

2.4.2   Innovators and Intrapreneurs

Innovation programs can be introduced to companies in a many different ways. On the one side, senior management might see the need to become (more) innovative in order to accelerate innovation through the value chain. On the other side, innovation is more likely to be approached by "*some daring manager who is willing to take the risk of trying something new*" (Andrew Gaule in: Sloane, 2011) which are so called "*Intrapreneurs*" (Pinchot, 1985). Such situations enforce various problems and challenge that have to be solved, which result into countless efforts by Intrapreneurs in spending more time trying to overcome the internal

barriers than enhancing the innovation productivity. This requires support and sponsorship by executives and senior management in mandating participation and removing the roadblocks.

Developing and managing innovation is related to a cycle of trial-and-error in case there is no established management, best practices or metrics to build the new programme on to. If the initial rollout is done company-wide, mistakes that result from trial-and-error cycles can be very costly and even lead to the eventual termination of the innovation programme.

Innovation Manager's tasks will include developing both internal and external networks, anticipating employees across departments and division to participate, educating people in different areas of business with different backgrounds and selling the benefits of Open Innovation. His work requires scientific and technological interest as well as comprehension aptitude when interfacing many different people on a daily basis to build relationships, networks and sources of inspiration and solutions for the innovation process.

> *"[...] the OI leader must consistently strive to ensure that bridges are built and maintained between various functions and departments of the company. The OI leader must operate at a strategic level, gathering new business goals and objectives, and translating them into next steps in the OI process."* (Matthew Heim in: Sloane, 2011)

In order to ensure that networks and bridges between various functions and departments of the company are built, potential employees that will support the innovation process should be identified. Möslein (in Huff et al., 2013) classifies three types of **innovators** that are involved when a company opens up the innovation process beyond the traditional outsourcing of research and development activities (see Huff et al., 2013, Table 5.2, p. 72):

- *Core inside innovators* are employees of a company that are developing new products, services, strategies or business models by their job specification, they are therefore *"innovating professionally"*. While these positions were mostly seen in the research and development department in traditional approaches, nowadays many other divisions contribute to innovation activities and participate in co-creation workshops.

- The group of *peripheral inside innovators* includes all other employees across all levels and units that generate new ideas in terms of intrinsic motivation and special engagement into business processes. They are not involved in the innovation process formally, but they act as innovators and provide possible solutions as well.

- The third group of *outside innovators* is composed of all external actors, including customers, suppliers, strategic partners, as well as academic institutions, research staff, or start-ups and competitors. This group builds a promising pool for generating design ideas, innovation concepts or other solutions. To complement the innovation activities with an external perspective, these actors can be integrated into the innovation process.

In a company that uses a manual suggestion box or an idea management system, peripheral inside innovators can be integrated into the process easily, even if they are not organizationally connected and integrated into core innovation activities. The growing variety of communication technologies and innovation tools enable an easy exchange and involvement of different parties and teams on the one side, but they also tend to raise the complexity and the organizational efforts concerning the management of ideas and innovations on the other side. Approaches that include a large pool of innovators combined with innovation tools into well-integrated, effective, as well as efficient business models are currently a matter of experimentation and exploration. Hence, this thesis includes a study on such tools and innovation platforms that include large pools of users. i.e. innovators.

2.4.3   Cultural challenges

When companies consider to adapt their innovation process or implement an open business model, being aware of the current culture in the company is crucial. Most changes in processes and organizations have a large impact on the employees, their tasks, relation to other members, as well as their motivation. Herzog (2008) refers to a corporate culture typology that has also been suggested by Burns and Stalker - distinguishing between *mechanistic* and *organic* organizations.

Mechanistic and organic organizations differ in terms of communication, information flow, hierarchical influences, job responsibilities, as well as conduciveness to innovation (Herzog, 2008, see Table 3-1, p. 66). Within the mechanistic culture, communication mostly happens along the (vertical) hierarchical lines, it is directed and the information flow is mostly unidirectional. The influence of employees is related to the organizational hierarchies and their job descriptions. Whereas, in the organic culture, communication is lateral and allowing employees from different departments to talk directly and often with each other. Ideas are exchanged and emphasized regardless of their authors, and the information flows in all directions. In organic culture, job responsibilities are not strictly defined and influence is related to expertise or knowledge of employees. Because of their flexibility, companies with

organic cultures are also *"more likely to recognize the potential of a (radical) innovation"* (Herzog, 2008) than mechanistic organizations.

It is important to note that open innovation leadership shouldn't end at a management or director level, it must be anchored at the highest levels of the organization to ensure enterprise-wide success. The open innovation attitude must flow across departments and involve several employees across levels and units. Particularly executives must not only understand, but also accept the value proposition before they will commit to sponsoring an innovation programme. This should include all CXOs (CTOs, CMOs, CFOs as well as CEOs) and business unit leaders. Pointing it out again, it is crucial to operate an innovation programme at a strategic level in order to realize success.

2.5   Co-Creation: Turning Customers into Innovators

A large number of companies have already adopted open innovation methods. But, instead of putting effort into understanding exactly what their customers want, companies often provide interactive tools for designing and developing customized products, reaching from product modifications up to novel concepts and constructions. Thomke and von Hippel (2002) call this packages *"tool kits for customer innovation"*. Such rapid prototyping tools or computer simulations can be applied by users and allow much faster and less expensive product development processes. However, the integration of customers and tools into the innovation process - particularly for the design purpose - requires user-friendly and appropriate tool kits, as well as a strong transformation of the company's management mind-set and customer relationship models. Companies and customers must redefine their relationship and align their interfaces (as shown in Figure 6), which can be risky.
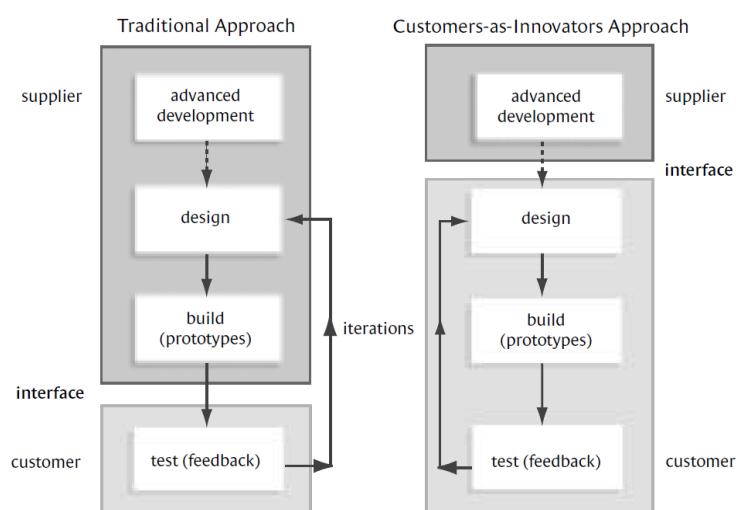
Figure 6: A new approach to developing custom products (Thomke and von Hippel, 2002)

Further, with the outsourcing of the design step to the customers, companies must focus more on the communication and exchange with customers and also on understanding their future needs. In some cases the implementation of co-creation with customers can force a company to strongly adapt their business model:

> *"[...] a company that turns its customers into innovators is outsourcing a valuable service that was once proprietary, and the change can be traumatic if that capability has long been a major source of competitive advantage."* (Thomke and von Hippel, 2002)

Outsourcing of product development to customers makes it better, cheaper and faster, but doesn't (and shouldn't) eliminate the process of learning-by-doing. Instead of putting effort into the trial and error during product development, a company can concentrate on how to understand their customers' needs and meet them by providing specific tools and platforms. Thomke and von Hippel (2002) note four important capabilities of tool kits for user innovation, such as: 1) enabling users to try out and complete series of design cycles, 2) being user-friendly, 3) containing libraries of useful modular components (e.g. modules that were designed by other users), and eventually 4) containing information about the production and manufacturing process that is essential to receive the product.

However, following these four capabilities and applying tool kits for user innovation does not support each industry. In the following three cases, user tool kits may be useful:

- If customers are increasingly asking for customized products, but implementing these increases the costs which cannot be passed on to customers, especially if the number of customers is small or shrinking.

- If many iterations between the company and its customers are needed before a final solution is found, and customers yet complain that their expectations are not met and the respond time is too long. Instead of appreciating standard products, customers search for a better solution elsewhere, which ends up in an eroding customer loyalty.

- If the tool kits (e.g. rapid prototyping or computer simulations) can be easily integrated into the production process or used internally to develop new products.

With user tool kits, common personal contact is replaced by human-computer or machine-to-machine interactions during product development. Besides the production process, this organizational change also affects marketing or sales processes - one can even speak of a change in the company's business model. As described before, senior management and business unit leaders need to recognize these issues at an early stage and determine how the roles and responsibilities in the company should evolve.

Piller (in: Sloane, 2013) describes the conditions for customer co-creation as following:

- Companies may face uncertainty of demand and are influenced by fast moving trends and volatile market conditions at the same time. Involving customers in the co-creative process should lead to a closer relationship.

- Developing modular products and components as parts of the product, and eventually splitting the product into 'internal' and 'external' modules may reduce the complexity of the entire process and allow contributors to focus on just one aspect of co-development. As mentioned before, this approach reduces the feedback iterations between the company and its customers that would particularly arise if both parties were working on the same module.

- Customers (as well as employees) that are interested and motivated in product co-creation require appropriate motivation and incentives.[8]

- Probably the most important condition for co-creation is that the company's ability to create a community of contributors or connect them to an existing community. Building up a community takes a lot of effort and time.[9]

Open Innovation, as well as co-creation both require an open and transparent process. Being able to make this cultural shift from the traditional, closed and private process onto the open, transparent and joint approach is probably the most important condition.

2.5.1   Structure of Co-Creation

Within a study on crowdsourcing in the German speaking area (Sundic and Leitner, 2013), two major forms of co-creation were distinguished: *problem solving* and *idea-generation* platforms. Problem solving platforms mostly focus on finding an appropriate solution to a provided question or problem statement. While problem solving platforms mostly focus on specific target groups and act as intermediaries or sometimes as mediators for *'micro-tasks'* (Ipeirotis et al., 2010), idea-generation platforms are often established by companies themselves and used to create large communities and customer bases. Idea-generation platforms mostly initiate open crowd contests to brainstorm new ideas or find many suitable answers to a topic by targeting scribbles or draft concepts in simple formulations and wordings.

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[8] Motivation factors and incentives are further described in section 3.3.
[9] It took more than five years to establish the community at Threadless (Source: Sloane, 2011)

In a similar approach, Piller and Ihl (in Huff et al., 2013) distinguish four different forms of co-creation based on two characteristics: 1) the *degree of collaboration,* which describes the relationships within the setting, e.g. a group of customers who are not connected among each other, or a network of customers who collaborate among each other while their collaboration is more or less not dependant on the company. 2) the *degree of freedom*, which refers to the tasks that were assigned to the customers, e.g. a tight definition of a problem to be solved, or a loose definition or *"a creative task for which a solution is hardly foreseeable because of many degrees of freedom*" (Huff et al., 2013). The authors propose a framework for differentiating co-creation as shown in Figure 7. This results into two dyadic (individual) and two network (community) based co-creation methods.
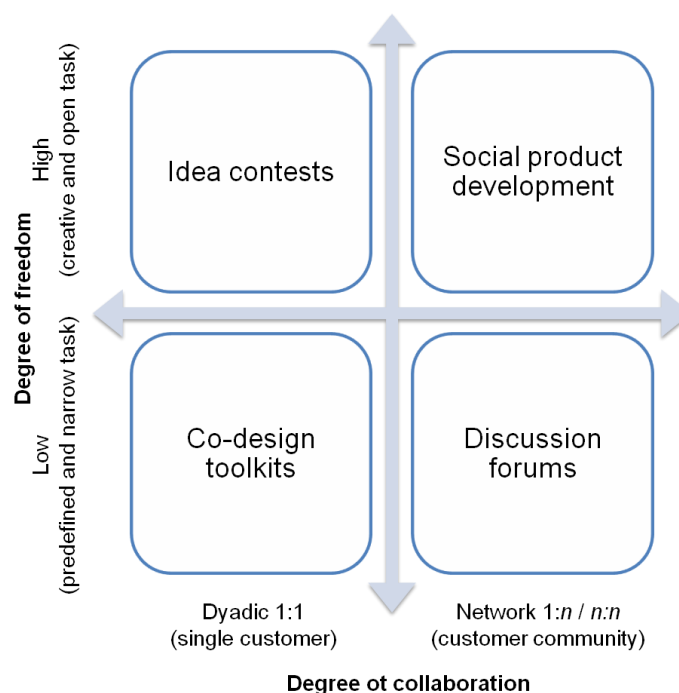
Figure 7: Defining co-creation activities (adapted from Huff et al., 2013)

Dyadic co-creation starts when a company provides an opportunity for individual customers to engage in the innovation process. The company involves many different customers, but there is little interaction among these actors and all activities are facilitated by the firm. Typical methods and well known examples behind this form of co-creation are *Idea contests* (Innocentive, Boeing'S World 787 Dreamliner airplane design contest, Threadless.com, etc.) and *Co-design toolkits* (Peer Production in 'Lego Factory', Dell's product configurator, etc.).

The two types of network co-creation methods are based on facilitating collaboration among many customers, and in contrast to dyadic co-creation, the results of network innovations emerge from collaborations among community members rather than from individual efforts.

The network results are patchwork from many ideas and various input by the community. At a rather low degree of freedom are *discussion forums* (e.g. for specific topics or products), offering primarily a platform for customers to exchange usage experiences and support each other. Open source development and open source forums are perhaps the best example of co-creation within a community with predefined tasks or topics. Far more creative and open tasks and novel ideas and concepts are collected in *social product development* communities, such as Quirky.com. Similar to Threadless, the Quirky community is involved idea generation and idea voting, as well as in ordering and paying for the product before it is produced or fully financed.[10] Ideas that are jointly developed in the community of customers and developer, and eventually pass several evaluations and receive enough online preorders, go into production.

The discussed implementations of Open Innovation and collaboration have shown that user communities can be an important locus of innovation as they can operate entirely independent of firms. How to pick the right users for the community is described in the next section.

2.5.2   Picking the right Crowd

Howe (2008) discusses theories of why it's critical to have disparate thinking in external crowdsourcing communities and notes that too much group thinking can negatively affect crowd voting and collective intelligence. A diverse crowd that provides almost random inputs of widely distributed knowledge can positively influence a crowdsourcing community in terms of a collective intelligence or *crowd wisdom* (Surowiecki, 2004). However, a group that doesn't have deeper knowledge about the problem area will probably have difficulties to develop actionable solutions. Hopkins (Sloane, 2011) argues in reference to Amabile (1996) that: *"group creativity works best in a group whose members comprise people who have high domain knowledge as well as people with less domain knowledge but high creative skills"* (in: Sloane, 2011). Further, Amabile (1996) postulates that the level of creativity needed for completing a task is determinant when choosing motivators: *"intrinsic motivation is conductive to creativity, extrinsic motivation is detrimental to creativity"*.

Referring to the size of the team, it is obviously easier to exchange radical ideas in small teams and confirm that all members of the team are aligned with the goal. At the other end are crowdsourcing communities, which allow anyone with an interest in the topic to participate and submit ideas. Hereby, *"many diverse perspectives will result in more ideas, better ideas and ideas with greater diversity"* (Philips, 2010).

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[10] A Quirky project starts when a user pays a fee to suggest a new product idea (currently $99). From: Huff et al. (2013)

In contrast to this, evidence has shown that larger groups are less effective at generating radical or disruptive ideas, since these seem uncertain and the crowd tends to favor ideas they can understand and believe in. Furthermore, as more people are involved, secrecy and intellectual property concerns arise as well. Essentially, in both small and large groups, the right motivation and incentives must be provided:

> *"In the case of open innovation intermediaries whose focus is to pursuit and foster creativity and innovation in groups we still witness how extrinsic and not intrinsic incentives, normally in the form of monetary prizes, play the main role."* (Bakici et al., 2010)

Bakici et al. (2010) highlight extrinsic incentives in particular as in some cases they seem not to foster the necessary engagement of a large quantity of agents. Referring to Hopkins (in: Sloane, 2011) it is crucial to start with a large enough number of participants, since *"only a small percentage of the crowd - approximately 1 percent - will actually participate fully [in crowdsourcing]"*. The importance of a large number of potential contributors is often discussed in literature. For example, study results show that the number and novelty of ideas increase if large groups of different participants are involved for a long period and the dynamics and diversity in the community can be maintained (Sundic and Leitner, 2013).

Further strategic approaches for building up open innovation, collaboration and crowdsourcing communities in particular are discussed in the next chapter.

3   Innovation with Crowds

Outsourcing the innovation process to the users and potential customers can support the innovation development and the process of finding ideas and solutions, but also it leads to a transfer of knowledge between users and the company, and thus enables the development of individualized products or services that meet customers' needs. Crowd-integration is however not only a feature that comes with product customization. *"In essence, the crowd has become a fixed institution available on demand"* (Boudreau and Lakhani, 2013).

Based on various studied company interactions with crowds on innovation projects in different industries, Boudreau and Lakhani (2013) have identified situations in which the crowds can or can't outperform individual or internal performers. Since crowdsourcing is moving into the mainstream, this chapter starts with a holistic approach to collaborative innovation and technologies that can provide innovation support in section 3.1. A detailed guideline to the implementation of crowdsourcing based on Jeff Howe's definition is discussed in section 3.2. Studying the motivation and incentives of the crowd is an important research question which is addressed in section 3.3. Further, arguments for maintaining the dynamics, diversity and openness of crowdsourcing by addressing the right target group and many different participants, as well as identifying lead users and motivating them to participate in crowdsourcing activities are included in section 3.4. This chapter concludes with a discussion of open, semi-open and closed crowd-related approaches based on the example of TED[11] in section 3.5.

3.1   A strategic approach to collaborative Innovation

These days, communities are supported by technology and tools for development, design, and collaboration which are getting increasingly powerful and easier to use, as their prices continuously drop. Further, online platforms that involve user innovation have become easier to use and simple to manage or mediate among distributed innovators. However, crowdsourcing as a method to solve problems by involving a large group of idea providers has been existing since centuries - e.g. as the idea contest by Emperor Louis Napoleon III, who had offered monetary incentives and award money for the development of a (cheap) substitute for butter which can be used by armed forces and lower classes. The possibly oldest known example of crowdsourcing was a contest to find a solution to "The Longitude Problem" by the British Government back in 1714. Although it that was considered almost

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[11] TED - Ideas worth spreading: http://www.ted.com

unsolvable by specialists and engineers, John Harrison, who was an unknown son of a carpenter invented a marine pocket clock - the 'marine chronometer' and was awarded the prize money of £15.000.[12] (Designcrowd, 2010)
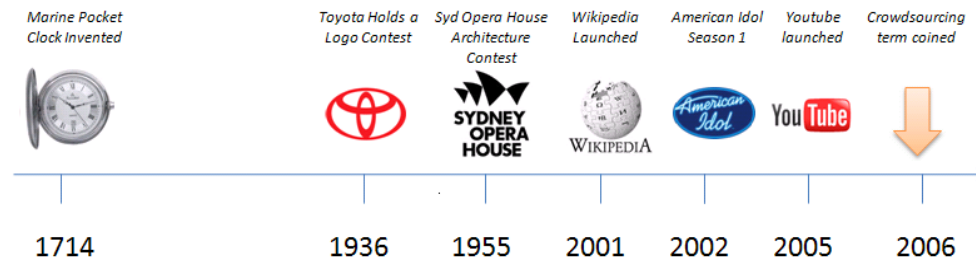
Figure 8: The History and Genesis of Crowdsourcing (Designcrowd, 2010)

In situations where a company faces a challenge that it cannot or should not solve on its own, involving external support is meaningful, but figuring out how to cooperate with and manage the crowd is crucial. Viewed from a high-level perspective, crowdsourcing can be distinguished into four different forms: *"[idea] contest, collaborative community, complementor, or labor market"* (Boudreau and Lakhani, 2013). Crowd contests, innovation markets, collaborative communities, as well as innovation toolkits and innovation technologies are discussed in the following as these are widely described tools that support crowdsourcing in literature.

3.1.1   Crowd Contests

Creating an idea contest is described as the *"most straightforward way to engage a crowd"* (Boudreau and Lakhani, 2013). Idea contests can be set up in early phases of the innovation process for generating ideas and solutions. The sponsor (company) identifies a specific problem, sets up the basic conditions for the contest (duration, prizes, etc.) and broadcasts the invitation to participants.

Contests work out well if the sponsor is running a series of experiments (i.e. trial-and-error) with variable outcomes; therefore they are most applicable for problems that can be solved by multiple solutions. Although a company uses only one solution in the end, many submissions can provide insight into technical trends and frontiers. Idea contests are *"most effective when the problem is complex or novel or has no established best-practice is approached"* (Boudreau and Lakhani, 2013), e.g. when a (good) solution is **not known** in advance.

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[12] Isaac Newton and many other scientists had tried and failed to come up with a solution. *"This example of crowdsourcing is a fantastic one because it highlights one of the principles of crowdsourcing - innovation and creativity can come from anywhere."* (Source: Designcrowd, 2010)

Such *'innovation contests'*[13] are also described as a *"web-based competition of innovators who use their skills, experiences and creativity to provide a solution for a particular contest challenge formulated by an organizer"* (Bullinger and Möslein, 2010). A known example of an idea contest is 'Google Lunar X Prize', a 30 million USD idea contest to send a robot to the moon, travelling 500 meters and transmitting data back to Earth.

3.1.2   Innovation Markets

Crowd labor markets or innovation marketplaces are *"virtual places where innovation demand and supply meet"* (Möslein in Huff et al., 2013), mostly in forms online platforms that are supported by web 2.0. Hereby, *"innovation seekers"* (mostly companies) and *"innovation providers"* (individuals or groups) meet online and discuss question statements or innovation tasks by providing concepts or solutions. These markets act as connecting intermediaries, they usually employ conventional contracting for the offered services.
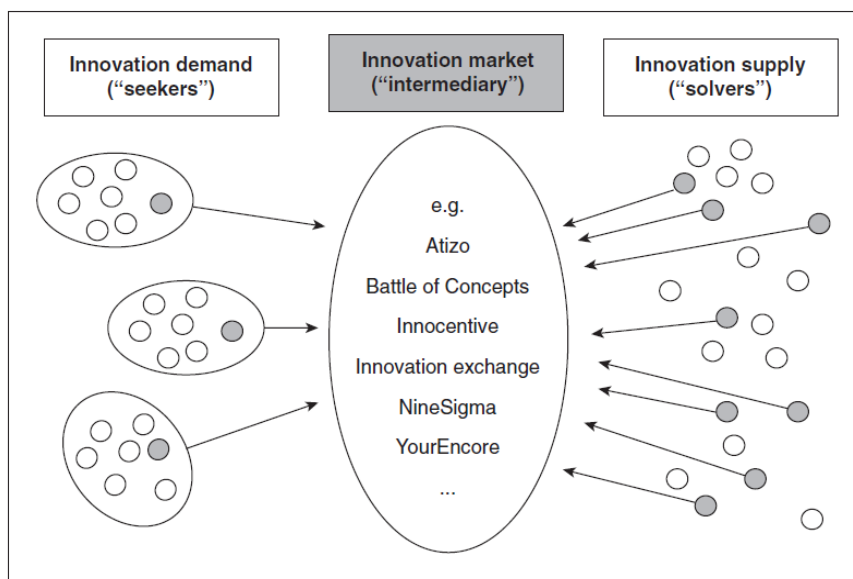
Figure 9: Innovation markets as intermediaries for open innovation (Huff et al., 2013)

In contrast to idea contests, labor markets work when the desired solution and the appropriate solvers are **known**. The so called 'micro-tasks' or 'micro-jobs' include simple data processing tasks that are better performed by people than computers, e.g. identifying objects or people in photographs. In reference to Boudreau and Lakhani (2013):

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[13] The term *'innovation contest'* instead of *'idea contest'* is used by Bullinger and Möslein (2010): *"to illustrate that a contest is able and suited to cover the entire innovation process from idea creation and concept generation to selection and implementation"* (see also: Tidd and Bessant, 2009)

"Labor markets' low transaction costs allow "bite-size" outsourcing [such as] repetitive tasks that require human intelligence but for which it would be difficult and expensive to hire full-time employees" (Boudreau and Lakhani, 2013) - as they may cost literally pennies per task.

Like outsourcing, crowd labor markets offer companies a flexible access to various skills on demand, but these markets also imply further managerial challenges in terms of business extensions or corporate employing policies.

InnoCentive, a well known crowdsourcing example which is also included in Figure 9, is distinguished controversially: Möslein (in Huff et al., 2013) describes it as an *'innovation market'*, but in literature it is also described as *'crowd contest'* (Boudreau and Lakhani, 2013), *'innovation catalysts'* (Sloane, 2013) or *'open innovation R&D intermediary'* (Bakici et al., 2010). Since it acts as an intermediary (see Figure 9), the latter categorization seems suitable. Further established online innovation markets include Amazon Mechanical Turk, Atizo, Clickworker or NineSigma - just to name a few.

3.1.3   Collaborative Communities

IBM was one of the first companies to recognize the advantage in teaming up with a collaborative community: the Apache community consisted of customers who 1) knew the deficits of their software and 2) had the skills to fix these. The individually improved components were integrated into steadily improving software. Ever since, companies are increasingly building up communities for creating innovations - there is a trend towards *'strategic, firm-sponsored innovation communities'* (Möslein in: Huff et al., 2013).

Cutting-edge literature describes innovation communities as enablers for collective crowd work, sharing and developing ideas and concepts, as well as for promoting corporate innovation activities and public relations. Communities usually consolidate interested innovators, experts and other users; companies and other idea seeking organizations; as well as online platforms, social software and Web 2.0 functionalities. In contrast to crowd contests, where individual contributions are treated separately, communities are organized to *"marshal the outputs of multiple contributors and aggregate them into a coherent and value-creating whole"* (Boudreau and Lakhani, 2013).

While companies can rely on their organization, structures and systems, crowds combine participants from around the world, with different backgrounds, education, cultures, industries, interests or motivation - which indicates that external crowds are harder to control than internal employees. As the example of Wikipedia proves, collaboration between large groups of users or in crowds are most effective when they are easy to access, use and

orchestrate activities among users. Many companies from technology, electronics or consumer industries have built up interfaces to their systems which allow their customers and visitors to view and create relevant content and solutions in order to support other customers - such as FAQ pages, reviews or configuration or product manuals.

Among telecommunication providers, Verizon from the U.S., as well as A1 Telekom Austria provide wonderful examples of support communities of customers who help address and solve other customers' technical questions and problems. Further examples of collaboration communities are seen on Dell's IdeaStorm community, Lego's customer designs, IDEO, the parade example of a design and innovation firm (a global community of design professionals on the OpenIDEO platform), and many more.

3.1.4   Innovation Toolkits

Following literature, idea contests, communities, Lead User methods and tool-kits for user innovation (von Hippel, 2005) are described as *'instruments for active customer integration'* (Reichwald et al., 2007). From a procedural perspective, innovation toolkits form environments in which users can develop solutions in prescribed steps. For example, toolkits are available to customize a personal computer (Dell), a car (VW Mini), a household (IKEA Kitchens), or toys (Lego).

Table 1: Categories of toolkits (Source: Huff et al., 2013)[14]

	Tool kits for user innovation	**Tool kits for user co-design**	**Tool kits for idea transfer**
Goal	*Creation* of ideas and concepts as well as new features or designs	*Customization* through product configuration (sales tool)	*Transfer* of existing innovation ideas and concepts from solvers/ users to seekers/ manufacturers
Design principles	• Compares to a "chemistry kit" • Broad solution space • High cost of usage • Complete trial-and-error	• Compares to a Lego kit • Restricted solution space • Low cost of usage (due to standard modules) • Only partial trial-and-error	• Compares to a blackboard • Unlimited solution space • Low cost of usage • No trial-and-error (only feedback from other users)
Users	Solvers or innovators with lead-user characteristics	All kinds of solvers/ innovators	Solvers or innovators with lead-user characteristics

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[14] adapted from Reichwald and Piller (2009)

Toolkits are quite widespread, e.g. for configuration or mass-customization of predefined solutions and products, or selection of variants among a wide range of offerings. However, the application of toolkits for more innovative solutions is *'still in its infancy'* (Huff et al., 2013). Toolkits differ in their strategic goal, design principles and target customers. Reichwald and Piller (2009) broadly classify toolkits currently available in the market into toolkits for *innovation*, *co-design* and *idea transfer*, as shown in Table 1.

3.1.5   Innovation Technologies

Technology in general supports innovation by enabling the process of conceptualization and prototyping of ideas, up to the production and diffusion of products and services. Innovative technologies like 3D printers, laser scanners, or high-performing computers at falling prices allow even individual users to fully develop new products and services - they are *"associated with the prospect of an ongoing democratization of innovation activities and with the often proclaimed trend toward 'personal fabrication'"* (Möslein in: Hoff et al., 2013). The trend of personal fabrication was anticipated by Neil Gershenfeld and describes producing and manufacturing in fabrication laboratories, so called FabLabs[15], which open up new possibilities of potential personal production, such as rapid prototyping, directly from ordinary household computers.

Innovation technologies, as well as the discussed tools have an impact on innovation activities as they:

> *"(1) allow for large numbers of innovators to contribute,*
> *(2) empower these innovators to collaborate in widely distributed settings,*
> *(3) foster high-speed interaction that radically accelerates innovation processes, and*
> *(4) provide a global memory for innovators to build on"* (Möslein, in: Huff et al., 2013)

as shown in Figure 10.

Innovation technologies facilitate cross-organizational and cross-industrial collaboration and foster the creation of new ideas and (breakthrough) innovations. These crowd-related technologies tools are still relatively new, but they open up space for novel strategies and integration of the crowd to meet today's innovation challenges. In contrast to traditional corporate organization, a crowdsourcing platform and thereof a problem statement is accessible by a large, scalable crowd of individuals with specific experience, skills and perspectives and thus the innovation process is supported *"at a scale that exceeds even that of the biggest and most complex global corporation"* (Boudreau and Lakhani, 2013).

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[15] FabLab at MIT's Center for Bits and Atoms: http://fab.cba.mit.edu/content/tools/
Happylab - Vienna Fab Lab: http://www.happylab.at/
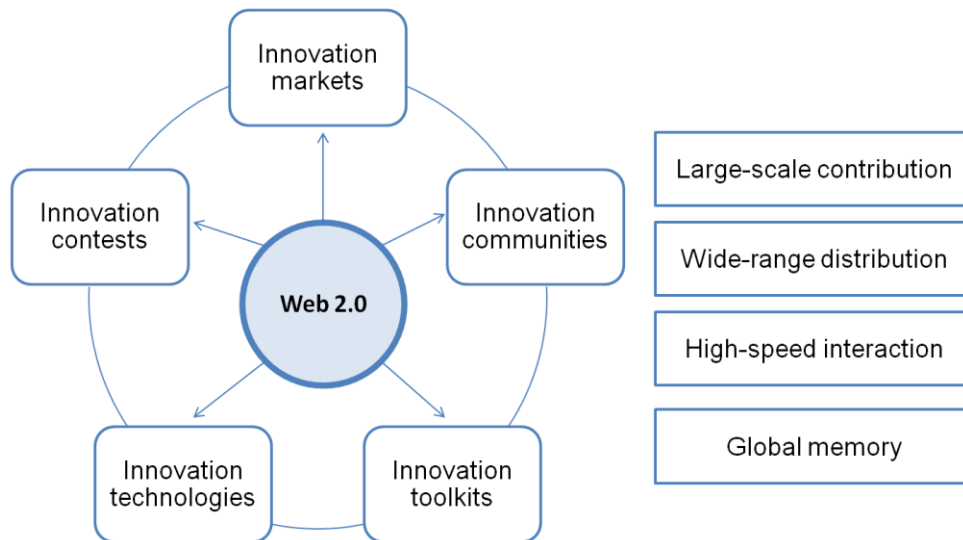
Figure 10: Tools for open innovation and their effects (adapted from Huff et al., 2013)

Crowdsourcing can bring together many various individuals to focus on a given task at a given time than common internal innovation processes and therefore might solve problems more efficiently. Also, crowds expand the capabilities of companies by providing them online resources, which is often more cost-effective than traditional insourcing or hiring solutions. Crowds and communities should be viewed as an optional problem solving approach for organizations. Basic rules of crowdsourcing are described in the next section.

3.2 Crowdsourcing Rules

Jeff Howe, who coined the term "crowdsourcing" for the first time in the Wired Magazine (Howe, 2006) defines it as following:

> *"I like to use two definitions for crowdsourcing: The White Paper Version: Crowdsourcing is the act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call. The Soundbyte Version: The application of Open Source principles to fields outside of software."* (Jeff Howe, 'Crowdsourcing: A Definition' on http://www.crowdsourcing.com/)

In his book, he describes ten rules of crowdsourcing by providing basic principles that form a *"neither comprehensive, nor fireproof" [...] rough road map to help [...] navigate this new terrain"* (Howe, 2008). According to Howe, crowdsourcing cannot be defined as a simple strategy, but rather as a highly varied group of approaches based mainly on the contribution of the crowd. That is why it is important to have an accurate idea about what has to be achieved and then initially *pick the right model* - Collective intelligence or crowd wisdom, Crowd creation, Crowd voting, and Crowd funding - each model suits specific needs, such as

solving a problem, redesigning a product, exploring crowd opinion, or financing a project by individuals rather than by banks or credit institutions.

The second step is the selection of the crowd. In the first instance, crowdsourcing involves all countless internet users among the world. Therefore, it's as crucial to *pick the right crowd* - a selected group of potential participants. The most important factor to successful crowdsourcing is a 'vibrant, committed community'. Getting people involved requires understanding their motivation to contribute. Whether it's: *"personal glory, the chance to interact with like-minded peers, and the opportunity to improve their skills or simply to learn something new"* (Howe, 2008), it's crucial to understand people's intention and reasons why they participate and reward them accordingly. Howe (2008) describes these rules as *"ask not what the crowd can do for you, but ask what you can do for the crowd",* as well as *"offer the right incentives"* in his work.

Crowdsourcing is often misinterpreted and paraphrased as an effort and cost saving method for solving problems and generating ideas. However, it must not be treated as cheap labor. From the company's perspective, you will need to keep the crowd engaged in an ongoing conversation, promote the campaign, as well as evaluate the numerous submitted proposals. To do that, the company should *'keep the pink slips in the drawer'.*

The "dumbness of crowds", i.e. the *"benevolent dictator"* principle points out that crowd collaboration requires one or more individuals guiding them. In open source software projects, a 'benevolent dictator' is a person that leads and moderates a team or a community. Even if people are generally good at organizing themselves in a group or crowds, a leader and some rules should be stated clearly. Similar to the open source software development, crowdsourcing is based on the common ideas and needs one or more leaders or decision makers, whereas at the same time, the leader should not limit participants in their creativity - *the community's always right.*

Crowdsourcing tasks should be designed as modular as possible, easily executable with little effort, since participants can spend a variable time for solving them. *Keep it simple and break it down* - whether they vote for products or ideas with only a few clicks, or spend some more effort and time to develop their own ideas and suggestions - participants should not feel committed to a complex task, since they actually contribute voluntarily to crowdsourcing. Given that crowdsourcing projects are always promoted to the entire community of internet users, a large amount of the submissions will not meet the required demands or quality. The principle to *'remember the Sturgeon's Law'* recalls that 90 percent of everything is crap (leaving only around 10 percent of usable ideas). However, to support the evaluation of the

submissions, participants may also be involved in finding the best ideas in a democratic process. Howe (2008) describes this as *"remember the 10 percent, the antidote to Sturgeon's Law"*.

A well planned crowdsourcing project allows using the crowd as valuable talent resources, partners, consultants or contractors. In return, the crowd should not be strictly controlled or limited in their creativity. The company should entrust the crowd with information about its market and product information, as well as corporate aims and strategies. Therefore, to protect important information within this bilateral exchange, terms of agreement and confidentiality should be contracted between the company and the community. The probably most important challenge of crowdsourcing are the intrinsic incentives that companies find difficult to match. These incentives and motivation is discussed in the next section.

3.3   What motivates the Crowd

Antikainen et al. (2010) explore various studies on collaboration in open innovation communities, focusing on what motivates users to collaborate and what kind of tools and methods can support this collaboration. Their results correspond to other literature results (e.g. Bakici et al., 2010; Hsieh et al., 2010; Antikainen and Vaataja (2010); Hars and Ou (2001); Lakhani and Wolf (2005); Lerner and Tirole (2007), and other) including following motivations to participate in online communities: *altruism, care for community and attachment to the group, enjoyment and fun, firm recognition, friendships, relationships and social support, interesting objectives and intellectual stimulations, knowledge exchange, personal learning and social capital, peer recognition, reputation and enhancement of professional status*, and many more.

Puah et al. (2011) propose many ways or strategies to encourage crowdsourcing (see Figure 11). Encouraging and motivating the crowd or community members to contribute can be supported by: monetary or non-monetary prizes and rewards, competitions, leader boards and ranking (such as Hall of Fame, etc.), badges that acknowledge some goals or completions, reputation and expression to other community members, advertising to create awareness in the community, (e.g. email newsletters or news feed on the platform), a user-friendly platform, as well as a good infrastructure, which refers to the facilities that enable accessibility, reliability, as well as the quality and speed of communication on the crowdsourcing platform.
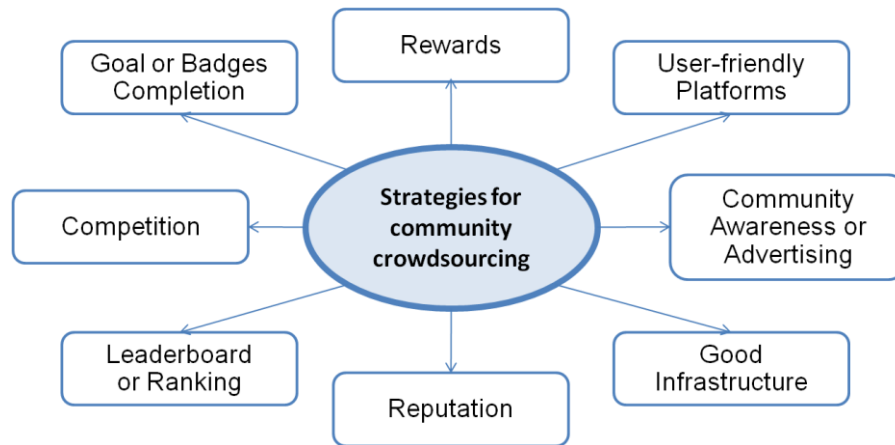
Figure 11: Strategies for community based crowdsourcing (adapted from Puah et al., 2011)

Crowdsourcing attracts people with different skills and professional backgrounds, and calls for a new name of these amateurs with professional attitude, know-how, commitment and networking skills, as *"pro-amateurs"* (Leadbeater and Miller, 2004). Howe (2008) describes this approach as the *"renaissance of amateurism"*.[16] The conventional way to distinguish amateurs from professionals based on their education and training is no longer appropriate, as various internet projects demonstrate. As an example, iStockPhoto started from being a platform that markets and sells images created by amateur and professional photographers and emerged to a creative network with over 7 million members and over 10 million files.[17]

Howe (2008) argues that the trigger for such *"leisure time inventions"* (Davis and Davis, 2007) is the exponentially rising level of education, as well as the ease of knowledge and information dissemination. He notes that today's technology has changed the way we *work*, *shop* and even how we *play*. In particular, team and parlor games were replaced by user-generated-content in blogs, forums or social networks.

Nonprofessionals increasingly contribute to the internet economy. There is an enormous increase of created websites and blogs - from 200 million websites recorded in 1997 to 11.5 billion in 2005. In 2006, the YouTube platform enjoyed 65.000 new daily uploads, which means that it took around 15 days to produce the same number of videos in YouTube as all movies listed on IMDb[18] (Cha et al., 2007). In 2008, more than 80 million videos were updated to YouTube (at least half of them were created by amateurs), growing to around 100 hours of video that are uploaded to YouTube every minute and over 6 billion hours of video that are watched each month. (Source: Youtube Statistics, June 2013)[19]

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[16] *"When a photographer makes $10.000 a month from something he considers a hobby, it's probably time to redefine the term 'amateur'."* (Howe, 2008)
[17] Source: http://deutsch.istockphoto.com/help/about-us, Date: 21.06.2013
[18] International Movie Database (http://www.imdb.com)
[19] Source: http://www.youtube.com/yt/press/statistics.html, Date: 21.06.2013

Due to social media and novel information and communication technologies, users around the world can network, form online communities and grow from amateurs to highly skilled actors, and are now able to apply their acquired knowledge in crowdsourcing and other value-added processes, which are supported by web 2.0 and online collaboration tools. Hung et al., (2008) discuss this issue as following:

> "Given this understanding, Internet business operators should install mechanisms to trace user behavior and set up some incentives to facilitate highly active users, who enjoy solving problems for others, share information and files with others" (Hung et al., 2008)

Generally, a group of lead users or opinion leaders is crucial for establishing and fostering a community. The importance of lead users in crowdsourcing communities is described in the following section.

3.4   Lead Users

One of the major findings of empirical research of user-innovation is that products developed or modified by users (particularly commercial developments) were developed by 'Lead User' characters (von Hippel, 2005). Lead users provide valuable input for innovative ideas and solutions, and Eric von Hippel first coined them back in 1986 as following:

> "(1) They are at the leading edge of an important market trend(s), and so are currently experiencing needs that will later be experienced by many users in that market.
>
> (2) They anticipate relatively high benefits from obtaining a solution to their needs, and so may innovate." (von Hippel, 2005, p. 22)

In reference to Lettl et al. (2008), even though Lead Users are *"likely to generate breakthrough innovations"*, the authors argue that lead users are still sparsely integrated into corporate processes *"because there is still little knowledge on how to identify and integrate them effectively"* (Lettl et al., 2008).

Initially, Muller et al. (1996) proposed to create a so-called *"lead user network"*, which is described as a group of affine users that is available for tests and reviews for certain product lines - whereas it is important to notice that users can assess their innovativeness and join the network on their own. The authors indicate following three concepts of lead user networks: *'self-generating'* (which means that lead users join the network on their own), *'self-selecting'* (which means that users can be selected to the network by specific knowledge or experience), as well as *'self-renewing'* (which works by constantly adding or removing users to keep up with changes in the market).

Von Hippel (2005) also argues that: "Innovation by users tends to be widely distributed rather than concentrated among just a very few very innovative users.", which is important when establishing lead user networks or similar platforms for users to combine their ideas and co-create. The approach of innovation communities that is rose from social networks and communities are illustrated in Chapter 4.

Besides their role as cutting-edge users, opinion leaders or innovators, lead users also act as pioneers and foster entrepreneurial activities by creating ideas based on their 'lead user needs' and developing these into new products or services. These users have evolved into important innovation sources or resources for companies. However, the important role of lead users has fortified with the evolution of the Internet and the transformation towards open business models which was strongly supported by the Internet. Companies called attention to lead users by finding them in discussion forums, blogs or other platforms, as they spread their innovation activities over the Internet. Nowadays, companies proactively develop open application interfaces and combine them with innovation platforms to draw attention of lead users from all over the world and develop complementary products, such as Apple's iTunes or other App Stores. The following section focuses on the chances and risks of open interfaces and user involvement that emerge during crowd innovation.

3.5   Risks of Openness and Crowd Involvement

In reference to Howe (2008), people essentially participate in crowdsourcing because of social, psychological or emotional needs. However, companies need to reverse the process of winning new customers by acquisition and retention by asking themselves the principle question: *'What can we do for the crowd -instead of- what the crowd can do for us?'* (Source: Crowdsourcing Rules; Howe, 2008).

Howe (2008) states that: *"Given the right set of conditions, the crowd will almost always outperform any number of employees – a fact that companies are becoming aware of and are increasingly attempting to exploit."* From the crowd's perspective, the right rewarding and incentives is crucial in voluntary participation. An inappropriate compensation may force many participants to abandon the crowdsourcing activity, leaving a *"small group of actors which emerge, submitting similar ideas and approaches repeatedly"* (Sundic and Leitner, 2013). A (formal) registration to the innovation platform has a negative impact on the number of solvers, although, it may be a nice way to select supposedly motivated solvers. As already argued, having a large crowd is critical, since a small group of registered customers might manipulate the image of the market and customer-demands, or even distort ideas and solutions.

From the corporate perspective: *"Pushing problems out to a vast group of strangers seems risky and even unnatural, particularly to organizations built on internal innovation.* [...] *But excluding crowdsourcing from the corporate innovation tool kit means losing an opportunity."* (Bourdeau and Lakhani, 2013). Also, arguments, that wrong modes of user innovation or crowdsourcing may force companies to *"falling behind in the relentless race"* (Pisano and Verganti, 2008) of advantage through technology, products, designs, etc. are existent. Still, one of the reasons why companies resist user innovation or crowdsourcing is that managers don't clearly understand the benefits of crowds and how to manage the process and the external crowd of volunteers to reach the set results. Considering the structure and organizing principles of the relationship between a company and the crowd, Pisano and Verganti (2008) call for a *'collaborative architecture'*, which distinguishes between open and closed collaboration modes and is strongly related to the company's strategy - similar to the discussed approach in section 3.1.

As organizations become more porous - with more outsourcing, freelancers, and crowdsourcing - risks rise along with potential rewards. The critical situation where the crowd gets off track is therefore analyzed by means of TED's open licensing model, which degenerated into pseudoscientific events under its brand. TED (which stands for Technology, Education and Design or 'Ideas worth spreading') was initially launched in 1984 as a single annual conference in California, and has grown into a global phenomenon. Since 2006, all talks are available for free on the internet - most of them are translated by a crowd of volunteers into more than 90 languages. Soon after the beginning, TED organizers ventured to: *"democratize the idea-spreading process by letting licensees use its technology and brand platform"* (Merchant, 2013) - allowing people around the world to further spread ideas by organizing local, independent TEDx events. Since 2009, more than 5.000 TEDx events have taken place around the world, around 2.700 of them were in 2012 (Source: Merchant, 2013).

By setting up an independent, decentralized (sub-)community, TED saved millions of dollars they would have had to spend through their initial business model. However, because TED allowed nearly anyone to contribute, it couldn't control the content or the brand any longer. TEDx licensees began hosting inappropriate events under its brand, which caused negative comments and articles about TED (Quora, 2010; Merchant, 2013). By communicating publicly about this issue, TED signaled that they cautiously paid attention to people's concerns. Eventually, the crowd was involved in creating new content guidelines for the TEDx community, and helping with monitoring the quality of events by providing feedback or vetting speakers. As a result, TED revoked their license, keeping some important parts of the organization closed. For example, out of the 25.000 TEDx talks that have been produced

until April 2013, not more than approximately 1% were published to TED.com. This approach is described in three levels by Merchant (2013): **open**, **semi-open**, and **closed**.

Table 2: TED's open and closed approaches (Source adapted from: Merchant, 2013)

How Open is Open? TED has different approaches for different contributors and audiences.	
Open	Accessible to everyone: • Access to TED.com content • TEDx attendance • Opportunities to present at TEDx TEDx licensees choose the presenters. Videos of presentations are posted on TEDx's YouTube channel. TEDx. attendees may be charged a small (less than $100) fee to help cover the conference costs.
Semi-Open	• TED conference attendance • TEDx licenses TED conference attendees undergo an application process and pay a fee. TEDx licensees are vetted by TED.
Closed	• TED.com contributions • Opportunities to speak at TED conferences All content is selected by TED staff (but translated by volunteers whose work is peer-reviewed).

As argued in this chapter, the interactions between companies and crowds on innovation projects in different industries, such as: industrial engineering, software engineering, media processing, gaming and apps, as well as new forms of marketing are rising and play an important role when business models are generated or designed. Since crowdsourcing is moving into the mainstream, being aware of the best form of user-involvement and co-creation, as well as knowing the basic rules of crowdsourcing is helpful to address the concerns and find the best possible ideas and solutions. Particularly, by knowing the risks and combining the benefits of both closed and open innovation methods, innovating companies can generate potential profits and achieve growth and a sustainable market position, as well as relocate the intensive trial and error process to find their customers' needs directly to the customers. Eventually, both innovation seekers and solution providers must find a balance between their competing and shared interests.

Following the success of Facebook, Myspace and Twitter in recent years, social media has drawn significant attention in electronic commerce. The *'social commerce'* is drawing increasing interest from the academic and industry in developing new theories and technologies to understand user-behavior and structures in social networks as well as extract knowledge from the user-generated content and social media. Hence, Social Media and online communities are studied in the following chapter.

4   Social Media and Online Communities

The role of Social Media has recently gained crucial importance to many businesses and even if there seems to be a broad definition of it, it is important to fundamentally understand Social Media and how it can be implemented or applied in a profitable manner. This chapter starts with the introduction of Social Media in general in section 4.1, including how it can be distinguished from related terms, such as *web 2.0* and *user generated content*, as well as a possible classification into specific categories in section 4.2. Section 4.3 includes an analysis of social media frameworks, focusing on structures and user behavior in online communities profoundly. Organizational Social Media is applicable from two perspectives: either by utilizing it for external customers with public content, such as an implementation of a Facebook Fan page or a YouTube Channel; or by implementing Social Media Software and applications for internal usage, e.g. for collaborative projects, content communities, wiki-based documentation pages, or information sharing such as blogs by executives. Section 4.4 addresses the implementation of Social Media for organizations, specifically focusing on innovation use cases – such as innovation communities.

4.1   The Rise of Social Media

During the 'dot-com bubble' around the end of 2001, the number of websites and internet applications massively increased and evolved rapidly. Hence, with all the companies that could cope with the challenges, a turning point for the web was about to happen. Eventually, the concept of '**Web 2.0**' (O'Reilly, 2005) was the successor of the "old-fashioned" Internet applications and websites that were built before 2000. The situation was coined as: *"far from having 'crashed', the web was more important than ever, with exciting new applications and sites popping up with surprising regularity"* (O'Reilly, 2005) by Dale Dougherty, O'Reilly's Vice President, and it grew into a global trend, as it was referenced more than 9.5 million times by 2007.[20]

Yet, to describe the different opinions on what Web 2.0 means, the differences between the 'Web 1.0' and 'Web 2.0' approaches was defined by O'Reilly (2005), pointing out the main differences, such as personal websites versus blogging, domains versus search engines, directories versus tagging, or Britannica Online versus Wikipedia.

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[20] Source: O'Reilly (2005)

The insight of web 2.0 and online collaboration is far beyond Internet applications, in fact: *"it means building applications that literally get better the more people use them, harnessing network effects not only to acquire users, but also to learn from them and build on their contributions"* (O'Reilly and Battelle, 2009). Hence, it is important to understand that Web 2.0 works as a system for *'harnessing collective intelligence'* (O'Reilly and Battelle, 2009) by combining the creative work of multiple individuals - *"it's about taking open innovation to the nth degree"* (Carrero, 2009).

Increasingly, the Web is less about passive content, but more a systematic collection of data which is captured and processed intelligently. For example, leading internet companies as well as users of the new web embrace hyperlinking, tracking or meta-information to optimize search results and harness collective intelligence. Similar to the open source development practice, *"users must be treated as co-developers"* (O'Reilly, 2005) which produce valuable '**user-generated content**'.

In reference to Howe's approach of *'professional amateurs'* (Howe, 2008), the Organization for Economic Co-operation and Development (OECD) describes *'amateur creators'* and user-generated content as: *"the main features of the so-called participative web"* (OECD, 2007). OECD therefore defines user-generated content with the following requirements: 1) the created content is published and publicly available to a group of other users, 2) the content contains *'a certain amount of creative efforts'*, as well as 3) the content is created in non-professional manners, *'without the expectation of profit or remuneration'*, but mainly motivated by self-expression and sharing the content among peers. (OECD, 2007)

As argued by Kaplan and Haenlein (2010), Web 2.0 extended by user-generated content is referred to as Social Media in literature. The term Social Media was coined by Kaplan and Haenlein as: *"a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content"* (Kaplan and Haenlein, 2010). The authors distinguish six common types of social media: *collaborative projects, blogs, content communities, social networking sites, virtual game worlds*, and *virtual social worlds*, whereas Weinberg and Pehlivan (2011) find four main typologies: *microblogs, blogs, online communities* and *social networks*. The following section gives insight into the common types of social media in literature.

4.2   Common types of Social Media

This section describes five common types of Social Media in reference to literature (Kaplan and Haenlein, 2010; Ebersbach et al., 2011; Weinberg and Pehlivan (2011).

4.2.1   Collaborative Projects and Wikis

Kaplan and Haenlein (2010) describe collaborative projects as: *"probably the most democratic manifestation of user-generated content"* which means that users can collectively and equitably create and modify content. The probably most known form of collaborative projects are wikis, which allow users to add, modify or remove content, like for example Wikipedia, the online encyclopedia. Kaplan and Haenlein (2010) argue that: *"the joint effort of many actors leads to a better outcome than any actor could achieve individually"*.

Although the contents on Wikipedia are not always taken for granted, it is believed that users and visitors are fair enough to share correct information and also prove and correct the undone articles - the substance is growing with the users. However, Wikipedia and other collaborative projects are emerging into main information sources for many consumers, and examples in literature show that positive, but particularly also negative comments tend to show up on Wikipedia pages (Kaplan and Haenlein, 2010). From the internal corporate perspective, co-creation (co-editing) spaces and collaborative wikis are useful tools for updating all employees or relevant project members on changes, news and other important information.

4.2.2   Blogs

Weblogs (short: Blogs), which have emerged from the old-fashioned 'Web 1.0' personal websites are one of the common types of social media and mostly used to display personal online diaries, i.e. *"date-stamped entries in reverse chronological order"* (OECD, 2007). Weblogs can be displayed in different forms, including text-based content, pictures, or audio and video. The term 'Blog' was picked as the Word of the Year 2004 by the Merriam-Webster Dictionary (Fiege, 2012; Merriam-Webster, 2004). Blogs are usually initiated and managed by individuals and provide the possibility of interaction with others through reading and commenting articles and also subscribing to new entries (e.g. via RSS Feeds).

Each entry is published with a permanent link (Permalink), to enable further linking to the content on other pages and websites. Websites were forerunners of blogs. The number of

blogs started to grow rapidly when service-providers, such as Wordpress, offered hosted server-based Weblog software. Wordpress is a widely spread open source blogging software-as-a-service, is currently hosting around 67 million blogs (67.584.889 sites on 24.06.2013[21]) worldwide. Similar to wikis, blogs may also include negative comments about companies and therefore result in negative information on the Internet.

4.2.3   Microblogs

Micro-blogging platforms, such as Twitter are not limited to one user-interface, but can be accessed and used through different programs, platforms, interfaces, and (mobile) devices. Twitter messages are similar to short messages (SMS) on the internet (Simon and Bernhardt, 2010). The so called 'tweets' are limited to 140 letters and attachments are limited to hyperlinks to other websites (including videos, music, pictures, or documents). Messages can be exchanged easily and quickly: *"This medium pushes breaking news on the web to the center stage like no other medium"*[22] (Ebersbach et al., 2011)

Companies use Twitter and micro-blogging services alternatively to the traditional public relations channels (such as TV or newspapers) to communicate with their customers. The communication is direct and informal. Hashtags (#) enable users to follow and search for specific topics, companies, brands, celebrities or names. Kwak et al. (2010) provide a closer look at tweets, analyzing around 41 million Twitter users. The authors reveal that any re-tweeted message reaches an average of 1.000 users, regardless how many followers the original tweet has.

4.2.4   Content Sharing Communities

At this point, the two related approaches of *'content communities'* (Kaplan and Haenlein, 2010) and *'social sharing platforms'* (Ebersbach et al., 2011) are termed *content sharing communities* - describing the self-explanatory communities for sharing digital content among users. In reference to Kaplan and Haenlein (2010): *"Content communities exist for a wide range of different media types, including text* [...] *photos (e.g., Flickr), videos (e.g., YouTube), and PowerPoint presentations (e.g., Slideshare)."* Compared to social networks, content sharing community members do not create a detailed personal profile page, but these pages only include basic information, such as the join date or the number of shared files. (Kaplan and Haenlein, 2010)

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[21] Reference: http://en.wordpress.com/stats/, Date: 24.06.2013, 20:53h
[22] Reference: *"Dieses Medium rückt wie kein anderes im Web brandaktuelle Nachrichten in den Mittelpunkt."* p. 85

Content sharing communities are very difficult to control from a corporate perspective. In particular, even if the communities define terms of agreement and rules to protect or remove inappropriate content, it is impossible to avoid sharing of copyrighted materials. For example, people tend to take pictures or videos with mobile devices at various events, or record recent movies, series or shows and share these (illegal) previews with others. On the other side, content sharing platforms, such as YouTube, have reached high popularity and large customer bases which make them a very attractive platform for keeping contact to customers, or marketing and advertising. In fact, YouTube counts up to 1 billion unique users each month. (Source: Youtube Statistics[23], June 2013)

4.2.5   Social Networking Sites

Essentially, social networking sites are web-applications that connect users by combining personal profiles, information pages, messaging services, and much more. Hence, designing a personal profile site allows users to combine personal information, photos, links and platform-specific content. To a great extent, traditional personal websites include information about the author, as well as a guestbook, where others could leave a message. This old-fashioned feature has been replaced with messaging and commenting features of Web 2.0.

Another benefit of profile pages is resulting in the enabled search to find users with similar interests and establish relationships. Users with common interest for specific topics form groups on Social Networking Sites (short: Social Networks). Ebersbach et al. (2011) refer to this as 'people'-aggregation which can arise among 'content'-aggregation on this platforms.

Percentage of companies with a profile on a social site

	Have a profile/presence	Do not have a profile/presence	Don't know
Social networking sites (N=349)	79%	18%	3%
Media sharing sites (N=347)	55%	37%	8%
Microblogging sites (N=343)	52%	41%	7%
Wikis (N=343)	48%	45%	7%
Blogging sites (N=342)	45%	45%	10%
Social review sites (N=338)	36%	52%	12%
Social bookmarking sites (N=339)	31%	55%	14%

Note: Numbers rounded to equal 100 percent.
Source: IBM Institute for Business Value analysis. CRM Study 2011.

Figure 12: Companies with a profile on a social site (IBM, 2011)

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[23] Source: YouTube Statistics: http://www.youtube.com/yt/press/statistics.html, Date: 24.06.2013
Also see: YouTube Statistics in section 3.2.2

Several companies use social networks for communication and public relations, marketing research in context of group members' (or 'fans') characteristics, or even as a distribution channel. In reference to IBM's study on Social Media: *"Companies tend to use social networking sites more than other types of social media"* (IBM, 2011), as it is also illustrated in Figure 12.

In general, social networks are classified into *private networks* (such as Facebook, Myspace, etc.) and *business networks* (such as LinkedIn, Xing, etc.) social networks (Heidemann et al., 2012; Ebersbach et al., 2011; BITKOM, 2011). Exemplary private social networks are:

- *Facebook* (http://www.facebook.com) was launched in 2004, and has emerged into the largest social network worldwide with around 4.900 employees and around 655 million daily active users in March 2013 (Source: Facebook Key-Facts[24], June 2013).

- *Myspace* (http://www.myspace.com) was founded in 2003 as a showcase platform for artists and their work, to support them in finding collaborators and partners to achieve their goals, as well as to connect with their audiences and fans. The site gives people access to 14,2 million artists and 53 million songs, whereas more than 13.000 songs are uploaded daily to the digital music library. (Source: Myspace Press Statistics[25], June 2013)

Exemplary business social networks (Career Communities) are:

- *LinkedIn* (http://www.linkedin.com) is among the world's largest online professional networks with more than 225 million members in over 200 countries worldwide. The platform was launched 2003, and around 4.500 members joined the network during the first month. Although young people tend to prefer Facebook to business networks, more than 30 million students and college graduates are currently registered on LinkedIn, according to LinkedIn: "they are LinkedIn's fastest-growing demographic". (Source: LinkedIn Press Center[26], June 2013)

- *Xing* (http://www.xing.com) connects more than 13 million professionals from all kinds of different industries and offers user profiles, messaging, groups, jobs, partnering or possibilities to co-operate and create common business ideas. More than 6 million users are based in German-speaking countries; it's therefore referred to as the 'European LinkedIn'. (Source: Xing Corporate Site[27], June 2013)

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[24] Source: http://newsroom.fb.com/Key-Facts, Date: 24.06.2013
[25] Source: https://myspace.com/pressroom/stats, Date: 24.06.2013
[26] Source: http://press.linkedin.com/about, Date: 24.06.2013
[27] Source: https://corporate.xing.com/english/company/xing-ag/, Date: 24.06.2013

The BITKOM (2011) study reveals that Facebook members predominantly use the platform for private purpose (92 percent private versus 8 percent business purpose), whereas Myspace members are spending time exclusively for private purpose. Xing Members, as well as the LinkedIn community follow predominantly corporate purpose: only 10 percent of Xing members use it non-corporate, while the purpose of LinkedIn users is exclusively job-wise.

Accordingly, **Online Communities** support the relationships between consumers and organizations, products, brands, etc., and further support the interactions and conversations, as well as the customer relationship management process. Online communities *"attract a diverse set of people of varying backgrounds"* (Weinberg and Pehlivan, 2011) which meet and exchange a variety of common topics.

As any novel technology, social media is intimidating and people and companies need to learn about the value that it can bring to their work and innovation activities. To conclude the introduction into social media, a reference to one of the main key chapter takeaways in Lindegaard (2012) is referred: *"A long-term key to success in using social media for open innovation is to look at and work with many different tools and build a "system" that enables you to capture value out of all these tools at the same time."* The following illustration in Table 3 is provided as an overview on the main characteristics of social media forms.

The following section 4.3 provides a deeper insight into online communities, a 'sixth' prevalent social media tool, as well as user behavior and patterns that arise within online communities.

Table 3: Main characteristics of social media categories (own depiction)[28]

Collaborative projects (Wikis)	Blogs	Microblogs	Content Communities (Social Sharing)	Social Networks
• all users may edit the content	• reverse chronological order	• short messages (up to 140 letters) in reverse chronological order	• personalization is optional	• registration is required
• content entries may be provided anonymously or after a registration to the Wiki	• one author (or a small group), a large group or commentators	• focused to topics on a daily basis, expressive, appealing, linking or coordinative content	• resources (data memory) are provided to content providers	• content is published on profiles, including interests and activities
• data is not structured	• visible to anyone on the internet	• follow and followers	• content is published, (deleted), and rated, but cannot get modified	• data is structured
• users are assigned to arrange and structure data on their own	• short articles	• commenting and 're-tweeting'	• content can be public (shared with others or everyone), or private	• relations between users can be established and shown to others (friend-list)
• users can create new content pages and modify linking	• up-to-date-ness of articles	• subscribe to channels or refer with hash tags (#)		• 'six degrees of separation' (Milgram): any two people are on average separated by no more than six intermediate connections is visualized ("People you might know")
• the latest saved version of a page is always shown	• personal experience involved	• mobile device-ready		• strong relation to social connections
• users take a back seat (content is more important than users)	• ease-of-use	• 'a real-time asynchronous medium'		
	• fast diffusion and propagation through networks			

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[28] adapted from Ebersbach et al. (2011)

4.3   Social Networks and Communities

Social media is a valuable enhancement for open innovation initiatives, as it provides a closer and more personal connection and interactions with stakeholders, supports idea generation and provides tools for managing feedback to ideas and projects, and eventually it can provide business intelligence and endorse brand awareness. Hence, social networking sites aim to particularly build and manage online communities between users to add these and other values to different networking aspects.

The Internet, as well as online communities have grown into an integral part of the everyday life - particularly youth generations seem to spend their time in social networks, or keeping in touch via instant messages, chat or mail. Hence, user characteristics and behavior are discussed in the following section.

4.3.1   User's Characteristics and Behavior

Several literature reviews and case studies on Social Networks (i.e. social networking sites. SNS) are existent show diverging results. For example, Boyd and Ellison (2008) state that: *"Although exceptions exist, the available research suggests that most SNSs primarily support pre-existing social relations."* The authors refer to social networking case studies suggesting that *"Facebook is used to maintain existing offline relationships or solidify offline connections, as opposed to meeting new people*"[29] (Boyd and Ellison, 2008). Research in this field has shown that Facebook users preferably search for their offline acquaintances than to meeting unknown people (Lampe et al., 2006).

In a study on Social Media, IBM (2011) uses the terms 'Generation Y, 'Generation X' and 'Baby Boomers' to describe 18 to 35 year olds, 36 to 45 year olds and people older than 46. According to the study: *"Baby Boomers* [46 years olds and older] *have demonstrated the most growth in terms of numbers using such* [social media] *sites."* (IBM, 2011). While in 2009, the number of Baby Boomers that use social networking sites was 50 percent, it grew to 72 percent in 2010 (see also Figure 13).

In literature, generations are often separated into *'digital natives'* and *'digital immigrants'*. Prensky (2001) describes students and first generations that natively grew up with new technologies as so called *digital natives* or *"'native speakers' of the digital language of computers, video games and the Internet"*. The author also points out that:

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[29] According to Wikipedia: Facebook (which was founded by Mark Zuckerberg to keep track with his university contacts) is the largest social networking site worldwide.

> *"The 'digital immigrant accent' can be seen in such things as turning to the Internet for information second rather than first, or in reading the manual for a program rather than assuming that the program itself will teach us to use it."* (Prensky, 2011)

The term immigrant can be ascribed to the fact that people, who are not native at a language (i.e. at new technologies) but have adopted many or most aspects of it retain an accent or previous behavioral patterns to some degree.

Percentage of consumers with accounts on social sites
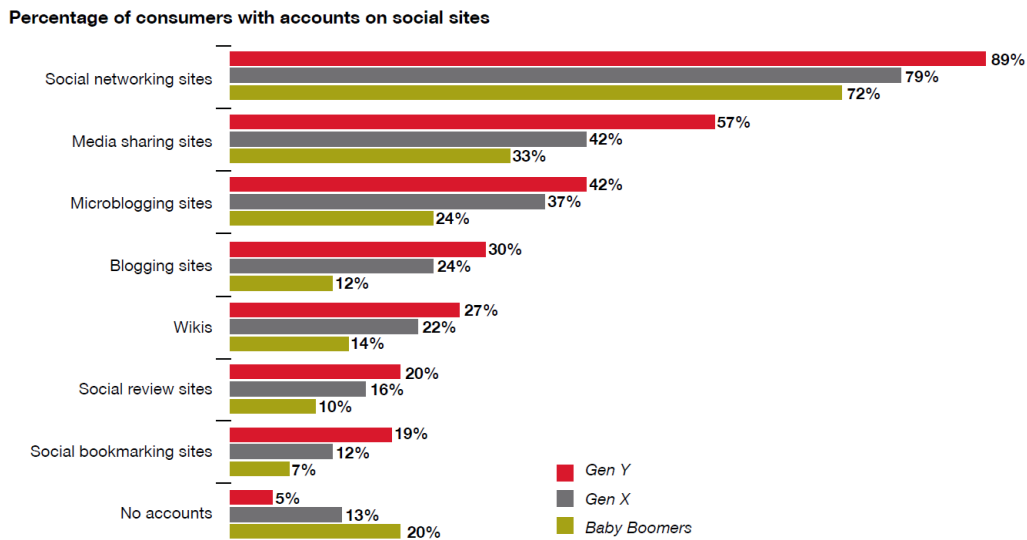
Figure 13: Consumers with accounts on social sites (IBM, 2011)[30]

According to Anatomy of Facebook (2011): *"people tend to have a similar, albeit typically smaller, number of friends as their neighbors, and tend to be about the same age. Somewhat surprisingly, even for individuals aged 60, the distribution of their friends' ages is sharply peaked at exactly 60."* While social media usage is growing among young and older generations, Lindegaard (2012) states that: *"Top leaders are too far away from the action"*, arguing that companies and in particular *'busy older executives'* still haven't ventured or recognized the potential of social media for innovation activities.

Referring to user behavior, Kosinski et al. (2013) reveal that: *"easily accessible digital records of behavior, Facebook Likes, can be used to automatically and accurately predict a range of highly sensitive personal attributes"* - such as age, gender, personality, as well as personal, ethnical, political or religious views and interests. The authors associate Likes and personal attributes and are able to distinguish attributes up to 95 percent accurately - which gives interesting insights into online personalization and privacy.

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[30] Notes: 1) Sample size M=1056. 2) Generation Y: People born between 1975 and 1992 (18 to 35 year olds); Generation X: People born between 1965 and 1974 (36 to 45 year olds); Baby Boomers: People born in or before 1964 (46 year olds and older). Source: IBM Institute for Business Value analysis, CRM Study 2011.

In 2011, Università degli Studi di Milano and Facebook (Anatomy of Facebook, 2011) have examined all Facebook users and their friendships (721 million users and 69 billion relations[31]), resulting in surprising facts, including a provable 'Small World' experiment[32] (Milgram, 1967) among Facebook users. As a result, all Facebook users are on average separated by less than six degrees, and over the past three years, the degree of separation has been shrinking although Facebook has grown. The study reveals that each Facebook member was connected to any other member through an average of 4,74 interconnections in 2011. In 2008 this number was 5,28 – very close to Milgram's 1967 approach which amounted to 5,5 interconnections. According to the Facebook Data Team, the world would: *'come closer together thanks to digital networks'* (Anatomy of Facebook, 2011), albeit the connections are in a great measure between users in the same country (84 percent). According to the conducted study, a Facebook-user has an average of 190 friends. Steinschaden (2011) has published the following projection:

- 0 interconnections = 190 people
- 1 interconnections = 30.100 people
- 2 interconnections = 6.9 million people
- 3 interconnections = 1.3 billion people
- 4 interconnections = 247,6 billion people (= 35 times the human race)

Stating that: *"every other user is a friend of a friend of a friend of a friend of a friend"* Steinschaden (2011) makes this person one of the round 250 billion people. It might seem implausible, but the extrapolation could be argued with the fact that Facebook allows fictional user profiles. Yet, the Facebook and other social networks' value is determined by the number of users as well as the frequency and quality of user activity (Fiege, 2012).

Besides emerging technologies, high-speed data-transfer and access rates that have increased in the past years, users of the internet have changed as well. As described earlier in chapters 2 and 3, users have advanced into so called 'gatekeepers' or 'opinion leaders' (Fiege, 2012), that can influence large groups of friends or communities of topic followers. Both their friends and followers regard their recommendations as of particular importance.

In literature, several approaches to the 'new' forms of online users are existent. Forrester's study on Social Technographics (Anderson and Bernoff, 2010) includes research on 186 million online users in the European Union in 2010, arguing that only 4 percent of adult online

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[31] 721 million Facebook users add up to more than 10 percent of the world population (Source: Anatomy of Facebook, 2011)
[32] Stanley Milgram's 'small-world' experiment (Milgram, 1967) proves that *"any two people are on average separated by no more than six intermediate connections"* (Source: Anatomy of Facebook, 2011)

users the so called "*mass connectors*" were responsible for 80 percent of *influential Impressions* (based on 120 billion impressions in total). Further, 11.1 percent of the users created 80 percent of the 1.1 billion *influential posts* on blogs, forums and social networks and are therefore entitled as "*mass experts*". These figures point to different categories of users in the social web that have different influence within their network. Consequentially, Forrester introduces the Technographics Ladder including seven types of online users: *"creators", "conversationalists", "critics", "collectors", "joiners", "spectators",* and *"inactives"* (Forrester Research, 2010). Table 4 illustrates the ladder in the U.S. compared to European countries:

Table 4: The Social Technographics Ladder in the U.S. compared to EU-7 (own depiction)[33]

Type	Creators	Conversa-tionalists	Critics	Collectors	Joiners	Spectators	Inactives
US	24%	36%	36%	23%	68%	73%	14%
EU-7	23%	26%	33%	22%	50%	69%	21%

In reference to the Global Consumer Pulse Research Study (Accenture, 2012), consumer interaction can be considered as *'driving the consumer highway in four different lanes'*:

1) *Digital consumers* have fully embraced digital technology and see it as a powerful tool that helps them learn about and purchase products and services. They are likely to use multiple channels -especially social media and mobile devices- to communicate with providers and make purchases, and to heavily research their purchases before making them. *"Just as drivers on the autobahn, consumers in this lane are moving at their own speed, without limits"* (Accenture, 2012).

2) *Transitional Consumers* are digital "savvy" and prefer to use do-it-yourself channels and tools for research, purchases and service. They will fall back on traditional approaches if forced to, but tend to view such approaches as "speed bumps" that slow them down and frustrate them.

3) *Experimental Consumers* have historically relied on traditional channels and capabilities, but discover and selectively engage in digital channels where it clearly improves their experience. They tend to "switch lanes" to digital services of it solves a specific issue (for example, using online banking for watching balance and ATMs for quick cash). Because of their unpredictable nature and habits, transitional consumers

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[33] adapted from Anderson and Bernoff (2010), Data Source: http://blogs.forrester.com/gina_sverdlov/12-01-04-global_social_technographics_update_2011_us_and_eu_mature_emerging_markets_show_lots_of_activity

tend to be more difficult to serve, but also represent a huge opportunity for providers to meet their expectations and help them find "a smoother route to satisfaction".

4) *Traditional Consumers* generally rely on traditional channels to interact with providers, such as physical retail stores or speaking with representatives in call centers to resolve an issue. These customers tend to either do less research before purchasing or seek advice from others to help them.

Referring to Forrester's Technographics Ladder, digital consumers conform to the top four categories, whereas traditional consumers can be compared to the 'inactives'. Eventually, transitional and experimental consumers conform to 'joiners' and 'spectators'.

Besides the changes related to online users, Alby (2008) argues that the usability of Internet pages has asserted as well. Jakob Nielsen, one of the famous usability researchers postulated '10 Usability Heuristics for User Interface Design' (Nielsen, 1995) back in early days of the web. Many of these heuristics that were developed for traditional software applications have emerged to the web.[34] While experienced online users consider these heuristics as trivial, new users of the Internet, e.g. digital immigrants, yet need to adapt to such patterns, such as not double-clicking on a hyperlink. Alby argues that although adapting to Internet patterns is time-consuming, it has become attractive for the general public due to the low costs of access to the Internet, which conforms to the earlier discussed *'pro-amateurs'* (Leadbeater and Miller, 2004) and the *'renaissance of amateurism' (*Howe, 2008).

4.3.2   Patterns in Online Communities

When referring to online collaboration, two dominating forms are distinguished in literature - loose forms of online collaboration versus strongly attached communities. For example, Haythornthwaite (2009) describes it as: *"a crowdsourcing model based on micro-participation from many, unconnected individuals, and a virtual community model, based on strong connections among a committed set of connected members"*. The describing parameters of the two forms - such as authority control, group focus or attachment - result in patterns that can be described as *'lightweight'*, if there is a weak attachment to the community, or as *'heavyweight'*, if the control or the affiliation by community members is strong.

Michael Wu, Lithium's[35] Principal Scientist of Analytics argues that the most important difference between a heavyweight community and a social network (i.e. a lightweight

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[34] For example, a logo on the upper left corner of a web page is linked to the 'home' page, whereas the navigation of a web page is preferably on the top or sideways, visibly different from the actual content of a web page.
[35] Reference: Lithium is the leading community management software.

collaboration model) is the was how people join and build relations in each settings While people join communities to find others with similar hobbies, interests, passions or lifestyles; social networks are built on interpersonal relationships, such as families, friends, colleagues, etc. (Lithosphere, 2010). The following figures illustrate the two forms of online collaboration:
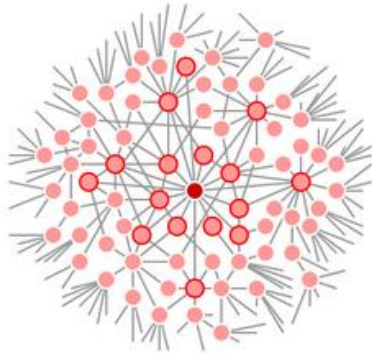
Figure 14: Structure of Social Networks (Lithosphere, 2010)

The network extends indefinitely, wraps around the globe and connects everyone. ● = Person X, ○ = direct connections, ── = a relationship between two persons.
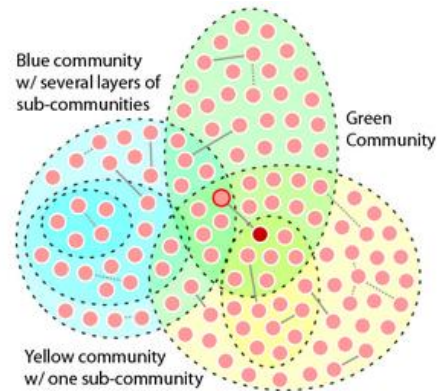
Figure 15: Structure of Communities (Lithosphere, 2010)

The Structure of communities is usually hierarchical, nested and overlapping. Each person is usually part of many communities at any given time. E.g., ● = person X is part of the green community, yellow community, and a sub-community of the Yellow community. There is a relationship to person Y = ○, who is part of all 3 communities.

As a community is launched and starting to grow, basic rules and norms of behavior are crucial for community members and heavyweight contributors in particular. Kietzmann and Hermkens (2011) present a *"honeycomb framework of seven social media building blocks"* [including]: *"identity, conversations, sharing*, *presence*, *relationships*, *reputation*, and *groups"* that is discussed in the following.

The block *Identity* represents users' personal identities in a social media setting, such as: gender, age, name, location or profession (Kietzmann and Hermkens, 2011). According to Kaplan and Haenlein (2010), users' presentation of their identities are *"done through self-disclosure; that is, the conscious or unconscious revelation of personal information (e.g., thoughts, feelings, likes, dislikes)".* Users may set up profiles with their real names or nicknames and - similar to business cards or email signatures - secondary services and tools offer social media profile cards to advertise their identities and harvest followers. These new forms of communication attract not only early adopters, but also people of 55 years or older, who rarely contributed to the Internet in the early years, but are the *"fastest growing demographic on Facebook"* (Kietzmann and Hermkens, 2011). Nevertheless, a careful balance between sharing information and protecting privacy is crucial for using social media.

Table 5: The Honeycumb of Social Media (Source adapted from: Kietzmann and Hermkens, 2011)

Type	Social Media Functionality	Implications of the Functionality
Identity	The extent to which users reveal themselves	Data privacy controls. and tools for user self-promotion
Conversations	The extent to which users communicate with each other	Conversation velocity, and the risks of starting and joining
Sharing	The extent to which users exchange, distribute and receive content	Content management system and social graph
Presence	The extent to which users know if others are available	Creating and managing the reality, intimacy and immediacy of the context
Relationships	The extent to which users relate to each other	Managing the structural and flow properties in a network of relationships
Groups	The extent to which users are ordered or form communities	Membership rules and protocols
Reputation	The extent to which users know the social standing of others and content	Monitoring the strength, passion, sentiment, and reach of users and brands

Conversations represent the extent to which users communicate with others. The large number and diversity of conversations within social media settings require specific formats and protocols. For example, Twitter focuses on short messages, which are mostly real-time updates without any obligation to respond, whereas blogs are *"less about staying connected synchronously than about facilitating rich, often lengthy conversations"* (Kietzmann and Hermkens, 2011).

Sharing represents the exchanged, distributed and received content. In literature and as mentioned before, 'social sharing' is strongly related to social media and implies that exchanging content between people is crucial. Consequently, social media consists of people connected by shared objects, pictures, videos, links, or location. Shared objects need to be evaluated in order to find out about what the users have in common, so that new content mediating their shared interests can be identified. On the other side, shared content grows exponentially and requires content management systems that allow screening, flagging and managing content or removing it if it violates the terms of agreement.

Presence includes knowing if and when other users are accessible, as well as where they are physically or online. Presence is described as "bridging" the real world and the virtual, and is stated through status lines, such as 'available', or 'busy', as well as 'checking in' into places with location-based applications, such as Foursquare. For example, firms will need to

focus more on user availability and locations in near future, e.g. for engaging in real-time conversations and activities, or location-based services and advertising.

Users can be related to others, which is represented by the *Relationships* building block. Relationships in social media settings can be fairly formal, regulated, or structured. For example, users on Facebook can associate with others as friends, family members, partners, or even followers, as seen on Twitter. In career communities, such as LinkedIn, users define their relations through common workplaces or education. Social media platforms must implement mechanisms to support building and maintaining relationships between users, such as identification or authenticity validation mechanisms, e.g. "friend requests" as seen on Facebook, or approval steps on LinkedIn.

Besides describing relations between users, the block *Groups* represents the formation of communities and sub-communities. Kietzmann and Hermkens (2011) refer to Dunbar's Number - the maximum of 150 stable social relationships that people are able to cope at one time. In social media, contacts can be sorted in different groups - either predefined by the system (e.g. 'close friends', 'buddies', or 'fans') or self-created groups by users. However, groups not only act as listings of users, but support filtering of information.

Eventually, *Reputation* is related to the (self-)standing of users in social media settings. Social media sites often rely on individual reputation mechanisms such as view counts, ratings, likes or endorsements as seen on LinkedIn. For example, the number of posts in a certain time slot might be a good metric for user activity in a community, whereas a rating system (the number of Likes) would be an appropriate indicator of the quality of a user's individual contributions.

The next section outlines the need for companies to engage in social media.

4.4   Social Media and Open Innovation

Despite the growing proliferation of social media in literature, research on social media usage, potential and challenges, especially from the perspective of innovation and business-to-business sector is still at an early stage. As already argued, the topic of social media often includes user profiles and relationships, social interactions, collaborations, as well as user-generated content. Social media among consumers is common, whereas organizational social media has still received little attention. In literature it is described as following:

> *"Organizational Social Media are technology artefacts, both material and virtual, that support various intra- and extra-organizational actors— including management, employees and*

external stakeholders—in a multiplicity of organizational communication activities for producing user-generated content, developing and maintaining social relationships, or enabling other computer-mediated interactions and collaborations in the context of a specific organization and its environment" (Van Osch and Coursaris, 2013)

Social media strongly supports creating new content or (re)discovering valuable information and knowledge which can be used for innovations. Also, the interaction and collaboration artifacts that are seen in social media (such as comments, likes, shares, etc.) can be applied in innovation processes. Kärkkäinen et al. (2010) argue about possibilities of social media regarding innovation (i.e. business-to-business) and outline the differences to the business-to-consumer sector based on the crowdsourcing approach:

- Crowdsourcing can be easily applied in consumer markets where there might be huge numbers of users or customers usable for such approaches, whereas in business-to-business context, this approach seems to be rather distant because of the relatively small number of customers.

- Crowdsourcing is strongly driven by the intrinsic motivation of the participants - such as fun, self-affirmation, recognition by the community, or altruism. These are important drivers for individual crowdsourcing participants to become user-innovators, but it is not proved that these motivators can be derived to the business-to-business sector.

- Eventually, the aspect of intellectual property has a strong effect on crowdsourcing activities. In general, content that is shared in crowdsourcing communities is publicly available and mostly treated as owned by the public, and therefore not necessarily attributed to the initial author. Whereas in business-to-business markets, sharing information and knowledge in particular in collaborative business development or innovation activities among companies in a sense of freely revealing of ideas is challenging and venturous.

According to Bernoff and Li (2010): *"Companies can deploy social applications in different departments to accomplish a variety of objectives."* However, based on a study on 122 Finnish companies, Kärkkäinen et al. (2010) reveal that business-to-business companies followed a rather marketing-oriented pattern for social media: the studied companies saw potential in discovering customer demands or *"merely passing product or service marketing-related information to customers (one-way interaction)"* (Kärkkäinen et al., 2010). On the other side, business-to-consumer companies recognized potential even in more intensive interaction modes that involve customers.

Regarding the perceived impact of social media on innovation activity, companies from both sectors claim that social media can increase customer orientation, provide important opportunities in shortening product development time or saving costs, as well as improving the quality. These results correspond to the literature review on benefits of open innovation that are discussed in chapter 2.

Ebner et al. (2008) refer to organizational social media in terms of open source projects in literature that depict the challenges of firms to *"initiate, build and nurture an external community for innovations"*. Based on this learning, they present an idea competition concept that is added to an established community and might stimulate the community members to be more active and produce more content in the community. Zhao et al. (2007) identify challenges to the future of work and investigate these concerns by comparing traditional organization forms to online communities that are characterized by personal motivation and flexibility of decition-making. The authors refer to previous research on future work by Malone (2004) who suggests that organizations should *"focus more directly on human values, putting individuals at the center of their work"* (Zhao et al., 2007). This flexible and individualized, *human-centric* working style is associated with online communities. Hence, the next section focuses on establishing innovation communities that support such human-centric work.

4.4.1   Innovation Communities

When referring to social media, Lindegaard (2011) states that: *"companies need a multi-target approach"* for innovation efforts, which lies in an intersection between an *innovation community*, an *innovation ecosystem*, and finally *customers and users*. Focusing on the innovation community, he states that: *"There are several reasons why companies struggle to translate the success of a strong physical community into the virtual world."* (Lindegaard, 2012). For example, companies are still strongly focused on their own presentation - i.e. on marketing their own activities instead of representing the other (external) innovation contributors or innovators. Also, new community members are often not engaged immediately or in the right matter, which causes the risk of *"lurking"* and inactivity. In terms of intellectual property, ideas that are (co-)developed in innovation communities are difficult to be attributed to an initial author, and eventually, the community owners don't seem to focus enough on bringing value to the time that people spend their communities.

To answer these challenges, as well as how to incorporate online communities in the corporate innovation process, selected models and research proposals for innovation communities are discussed in the following.

When realizing an innovation community, Füller et al., (2004) suggest a four-step process which includes: 1) determining the relevant attributes that users need to participate in the innovation task or challenge; 2) identifying users as well as where they might be found most probably, 3) designing the interaction with users efficiently, as well as 4) enabling access for users and encouraging them to take part in the co-development process. This approach of *'Community-based Innovation'* (Füller et al., 2004) includes three stages: *idea generation*, *design and engineering*, as well as *test and launching*. The benefit of this approach is argued by the authors as:

> *"By integrating selected community members more than once or iteratively in different stages these users may even get the status of development advisors what strengthens the idea of collective invention and trust building."* (Füller et al., 2004)

Compared to the study by Füller et al. (2004), Zhao et al. (2007) point out three holistic implications that support the design of an online community infrastructure and focus on human-centric work activities: 1) *"a [loosely controlled] market-like economic context and multiple layers for decision-making"*, 2) *"increased support for managing the tasks of this more flexible work environment"*, as well as 3) *"a robust mechanism for continuous learning"*. (Zhao et al., 2007)

Further, Hautz et al. (2010) consider innovation communities as: *"a particular form of network offering special interaction possibilities".* In their study, the authors identify differing community roles by combining user behavior, relationships, and the user-generated content. Based on the underlying studies, the results by Hautz et al. (2010) include: *'motivators'*, *'attention attractors'*, *'passive users'*, or *'idea generators'*. To some extent they refer to the five community roles recommended by Kim (2000): *'visitors', 'novices', 'regulars', 'leaders',* and *'elders'* - arguing that each role is described by specific community tasks, roles, or rights.

From a company's perspective, using social media for brand activities, marketing, sales or talent recruiting opens new opportunities that can emerge into new forms of collaboration with an external audience, such as idea contests and communities, and set the groundwork for sustainable open and crowd-based innovation. Eventually, the role of communities in *"creating, shaping, and disseminating innovation activities"* (Hautz et al., 2010) is strongly affecting the management of innovations. Therefore, the interest in *online innovation communities* (in terms of collaborative development of products or ideas) is rising in both business and research. Online communities are further studied in the remainder of the thesis, based on the example of A1 Telekom Austria AG, Austria's incumbent in telecommunication. The following Table 6 summarizes the main collaboration methods that were discussed and reviewed in the first part of the thesis.

Table 6: Literature Review of Collaboration Methods (own depiction)

Method	Main Characteristics	Motivation (Benefits)	Challenges (Risks)	Empirical Studies
Closed Innovation	internal experts form innovation teams in companies	• strategic benefits: secret development, first-to-market potential	• traditional, old approach • slow development • closed or low interactivity	Reference: Schumpeter (1983), Herzog (2008)
Open Innovation (Chesbrough, 2003)	external partners, suppliers, academic institutions, etc. are involved into business or innovation process	• external know-how integration, partnering • reduced costs, shorter time-to-market • new business models	• external actors have impact on the business processes • external intellectual property	Gassmann and Enkel (2004), Lichtenthaler (2008)
Innovation with Lead Users (von Hippel, 2005)	Lead Users are involved into product development or innovation process	• getting direct customer feedback • moving the expensive trial-and-error process to users • higher product novelty and fit-to-market rates	• acceptance by a large group of customers • feasibility of the ideas and concepts	Bogers et al. (2010), Lettl et al.(2008)
Crowdsourcing[36] (Howe, 2008)	internal corporate activities are (partially) outsourced to an external crowd of internet users	• getting direct customer feedback • higher product novelty and fit-to-market rates • involving (binding) users into business processes, partially brand awareness • intrinsic and extrinsic motivation, monetary and nonmonetary incentives	• very interactive approach • the output is unknown at the beginning of the process • high quality of the input (i.e. ideas) is not guaranteed	Boudreau and Lakhani (2013), Ebner et al. (2008), Vukovic (2009)
Open Source Innovation *Lakhani (in: Huff et al., 2013, p. 155 ff.)*	open source software is developed in collaboration communities and provides open access to all parties (co-developers, users)	• know-how exchange with experts • individual, strong relation to a community • mostly intrinsic motivation and nonmonetary incentives	• self-organized 'bazaar' • intellectual property is public, it is owned and shared by everyone	Davis and Davis (2007), Lerner and Tirole (2002), Lakhani and Wolf (2005), Hars and Ou (2001)
Innovation Communities *Füller et al. (2004)*	innovators are enabled to collectively discuss and develop concepts, or share and promote ideas in virtual communities	• strong community relations, • topic-based exchange by interested or specialized innovators • on-top **idea contests** in existing communities benefit from existent crowds and can further stimulate more activity among users	• collective development needs to be supported by web 2.0 and social software • 'outsiders' might be excluded in closed communities	Antikainen and Vaataja (2010), Assmann et al. (2009), Bullinger and Möslein (2010), Hsieh et al. (2010)

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[36] Crowdsourcing relates to common benefits of Open Source development and Innovation Communities, and also includes Idea Contests.

4.4.2   Internal Communities

Although social applications (.i.e. social software) has not primarily been promoted commercially so far, its potential is noticed by the economy. Many companies are currently exploring the entrepreneurial benefits that can be fostered by social applications externally, as well as internally. As discussed before, the main fields of external social applications for a company reach from customer blogs, social media pages and communities, to market research, competitive intelligence and other networking platforms. Analogously, internal social applications are applied in fields of knowledge management, collaboration wikis, internal communication, or even e-Recruiting. In reference to Bernoff and Li (2010), social applications can be applied in various departments, and each one is addressing a specific purpose: *Research and Development* ('listening'), *Marketing* ('talking'), *Sales* ('energizing'), *Customer Support* ('supporting') or *Operations* ('managing').

However, the lack of research on organizational social media seems to be related to preoccupation with the individual user as a level of analysis and less related to higher-level units of analysis, such as the group and organizational level. Van Osch and Coursaris (2013) describe organizational social media as based on three aspects of information systems, namely *actors* (people), *artefacts* (information and communication technologies), as well as *activities* (processes), and zoom on three central actors that play an important role in organizational activities: *management*, *employees* and *external stakeholders*.

Kärkkäinen et al. (2010) define four major challenges in adopting social media in innovation as: 1) companies yet don't understand the potential of social media in innovation, 2) financial gains of social media are difficult to assess, 3) the adoption of new mental models and practices (i.e. a corporate culture change) is difficult, as well as 4) the fact that proven examples of social media in innovation are still rare or not evident. Also, security issues in social media applications and inadequate personnel or financial resources are often considered as challenges by companies. On the other side, *"the kind of direct, two-way contact that social applications create is infectious"* (Bernoff and Li, 2010), and as companies become more skilled, the benefits of social media with innovation rise.

The corporate challenges and needs for continual optimization, innovation and competitiveness has to some extent reinforced organizational learning and knowledge management approaches. In the organizational context, **communities of practice** or COPs (first coined by Wenger in 1999) are *"informal groups of people seeking knowledge and information so as to solve problems in their specific fields of work"* (Leal and Baeta, 2006) or

aiming to create and share knowledge and problem solving (Wenger et al., 2002). Hence, communities of practice are described as tools for capturing valuable knowledge, generating new ideas, as well as for supporting innovation activities.

Eventually, the use of information technology has fostered collaborative approaches and combining or production of knowledge and new ideas . In contrast to traditional work groups, communities of practice are not defined by targets, time schedules, objectives or workday schemes (Leal and Baeta, 2006). Viewed from a global perspective, face-to-face relationships in large, multinational companies are almost impossible so that virtual groups or communities build a great alternative for (real-time) knowledge and information exchange.

5 Empirical Analysis

This chapter includes the empirical study on innovation activities in corporate settings based on the example of A1 Telekom Austria. As summarized in the previous chapters, several approaches for collaborative innovation and idea generation are applied in companies and studied in literature. This study includes A1 Telekom Austria's three innovation-related idea generation approaches that are similar to closed innovation, crowdsourcing and innovation communities as described in Table 6. The study particularly focuses on the (organizational) process setup and performance - namely on the impact of the provided ideas and solutions, user involvement, as well as the relation between lead users, sponsors (idea seekers) and other participants of the ideation processes. Social Media issues that enforce and enhance the crowdsourcing process are explored as well. The selected case as well as the research questions were derived from the literature review in the first part of the thesis and shall support and supplement the open questions and research topics.

The chapter is organized as following: it starts with the explanatory research background and motivation for the selected empirical study in section 5.1, and is followed by the applied research methods and study design in section 5.2. Section 5.3 includes a perspective on A1's co-creation and crowdsourcing approaches, starting with an overview of A1's social support program and the prevalent types of Social Media as described in the literature review, as well as the crowd sourced idea contest 'Mein A1 einfach machen' in section 5.3.1. Further, the two internal ideation approaches are explored: a deeper insight into the internal tool-based innovation approach is provided in section 5.3.2, concluding with the internal 'offline' approach in section 5.3.3. The chapter concludes with the analysis of the results in section 5.4 and conclusions in section 5.5.

5.1 Research Background

Nowadays, innovation activities and processes are often carried out with external actors, for example in crowdsourcing communities, innovation platforms, or idea contests - e.g. based on the approach of *crowd wisdom* (Surowiecki, 2004), *lead users* (von Hippel, 2005) or interactive *innovation tool-kits* (von Hippel, 2001). As argued in the first part of the thesis, the change of business models towards open innovation has not only enabled customers become active content providers by participating in product development or innovation

activities, but it has also shaped the organizations and their way of thinking and doing business. Hence, the selection of this topic is also in the context of managerial practice.

As argued by Hautz et al. (2010) the new forms of *'online innovation communities'* have taken an important role in product development and innovation activities, which is why the new forms of co-creation and innovation have reached substantial interest by commercial management and academic research. The topics related to innovation communities are challenging also in terms of online or open source and intellectual property research. For example, it is important to note that crowdsourcing research is often related to exploring and analyzing behavior of online volunteers, their motivation and incentivation within idea contests. Therefore, crowdsourcing communities and the behavior of community members are subject of this thesis and studied deeper.

Literature studies on the success and failure of online communities are common and following factors can be found in the results: a high number of community members, trust and behavior codes, content (up-to-date and high-quality), loyalty of customers, user support and technological infrastructure, as well as service and marketing. (Leimeister and Sidiras, 2004; Assmann et al., 2009). Hence, this thesis focuses on: 1) the **content** as well as on 2) the **dynamics** and relations among participants of idea-contests, i.e. user-behavior.

The purpose of the thesis is to provide a contribution to the literature streams, and at the same time to provide basic managerial implications on how to use crowds effectively: *"despite growing list of success stories, only a few companies use crowds effectively—or much at all"* (Boudreau and Lakhani, 2013).

To reach the expected results, a fine-grained qualitative study on user-behavior, participation and performance in a crowdsourcing-based idea contests is performed. While standardized (quantitative) research methods require that the assets to be examined are known, qualitative methods support research of new and unknown aspects of data. Qualitative research methods further enable a closer look on the assets (Flick et al., 2000) than quantitative research strategies that are based on figures, statistics and standardized results. Also, in qualitative descriptions and evaluations of the data samples, the subjectivity of respondents and provided content is highlighted sharper than can be achieved with a standardized surveys or questionnaires.

Qualitative research is particularly affected by the digital and technological revolutions that shaped the beginning of the twenty-first century. Computer software, digital recorders, IP-telephony and other digital tools are used for conducting and recording interviews and focus

groups as well as analyzing qualitative data. Given the widespread use and access to this medium, it is no surprise that the Internet has been discovered as an object of research and also as a tool to use for research (Flick, 2009).

The current social interactions are transforming into digital interactions of millions of online users - in communities, messengers, or social networks - just to mention a few forms.

> *"There is no doubt that new research on the use of Internet and other information and communications technologies (or ICT) is adding significantly to the literature of cultural studies, sociology, economics, law, information science, business and management fields, communication studies..." (Kozinets, 2010).*

However, despite the vast media presence of the Internet as a phenomenon and the possibilities of using and misusing it, as well as the growing number of people using internet technologies as a form of communication across social groups, one should not forget that not everyone has or wants to have access to the Internet.

To stay current, research methods must follow as well (Kozinets, 2010). For example, Virtual Ethnography, i.e. *Netnography* (Kozinets, 2002) has been adopted to study online cultures or communities by using publicly available information and meta-information. This method allows identifying users and their consumer behavior similar to traditional market-oriented ethnographic research methods, and - compared to traditional research methods such as focus groups or personal interviews - it is less time consuming and can be conducted unobtrusively.

5.2   Study Design

The study design is adapted from Kozinets (2010) and the survey is set up as following: 1) *Definition of research questions*; 2) *Identification and selection of the community*, as well as observation of the participants which is the premise for *Data collection*; and finally 3) *Data analysis* and iterative interpretation of the findings. The main results are presented in section 5.4.

5.2.1   Research Questions

To answer the asset of (online) innovation communities and favorable user behavior in these communities, the following research questions considering the content, user-participation and behavior, as well as the influence of social media are defined in this section.

(1) Commercial Feasibility of Ideas:

Given that crowdsourcing projects are always promoted to the entire community of internet users, a large amount of the submissions will not meet the required demands or quality. The principle to *'remember the Sturgeon's Law'* (Howe, 2008) recalls that 90 percent of everything is crap (leaving only around 10 percent of usable ideas). Hence, the approach of adapting and reusing existing solutions to solve new problems is analyzed as following:

- *What is the impact of the level of specificity of the submission criteria on the commercial feasibility of the ideas?*

(2) User Participation and Behavior:

Users of online communities increasingly gain professional experience as they become accustomed community members, and some of them even become opinion leaders or leading members. According to Assmann (2009): *"[visitors and new users] interact less with other members of the community and have fewer and weaker ties within the community than members who have been in the community for some time"*. Therefore, the impact of opinion leaders or lead(ing) users on other participants and community members (i.e. groups) is explored in this study.

Particularly, opinion leaders are considered as users with Lead Users characteristics in this analysis. In order to analyze the idea contests in terms of the idea selection process, the impact of Lead Users in the community is explored as following:

- *Do individual characteristics of idea-creators (opinion leaders or lead users) influence the likelihood of idea selection?[37]*

Analogue to Lead Users, the influence of the idea seekers (sponsors) or third parties on the community members (i.e. participating group is studied.

(3) Social Media Tools for Communities:

In reference to Kaplan and Haenlein (2010), Social Media is ever-present today, allowing companies to *"engage in timely and direct end-consumer contact at relatively low cost and higher levels of efficiency".* Social Media and web 2.0 provide important and new communication pathways and opportunities for companies. However, to make social media a useful support for crowdsourcing initiatives, several challenges arise. Hence, the study includes a research question on social media tools:

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[37] Are ideas preferably selected if the author is a lea user, i.e. lead users are prominent in the community?

- *What is the difference of social media tools in supporting co-creation activities within the three studied approaches?*

5.2.2 Data Collection

As proposed in the literature review, crowdsourcing generally takes one of the distinct high-level forms: *idea contests*, *innovation markets*, or *collaborative communities*.[38] After exploring crowdsourcing projects in and around Austria, idea contests within existent communities were perceived as the common form in corporate settings. In reference to Bullinger and Möslein (2010) who find a majority[39] of contests from a rather random sample of innovation contests conducted by firms, a large-enterprise platform was selected among firms that provide online crowdsourcing activities. The community selection criteria is adapted from Franke and Shah (2003): "*to observe community-related innovation behavior, the community as a whole or some community members should be engaged in innovative activities".* Hence, the A1 Support Community operated by A1 Telekom Austria was identified, and among various community threads, the idea contest *'Mein A1 einfach machen'* was selected for a deeper analysis to answer the research questions.

In reference to the public idea contest 'Mein A1 einfach machen', similar innovation processes - i.e. idea contests - that are organized and hosted internally in the company and include employee participants were identified and selected for this study. This includes:

- Internal offline co-creation with employees,

- Internal online (tool-based) co-creation with employees; as well as

- Co-creation with customers - including the Idea contest *'Mein A1 einfach machen'*[40] that was hosted in the public crowdsourcing platform.

Hence, the idea contest from the external crowdsourcing community (A1 Support Community[41]) is compared to the two internal ideation approaches.

Based on the identified data source, the following A1 Support Community data sets were selected for the study: the project forum, idea forums including metadata, Leader Board pages, as well as the A1 Facebook Fanpage. The data was observed and collected in September 2013. However, since the idea-contest has finished during the first quarter of 2013 and the submitted content is not changed or modified, a specific date stamp for content

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[38] ref. to Chapter 3.1: *A strategic approach to collaborative Innovation*
[39] 43 out of 57 idea contests are conducted by firms
[40] Main Data Source: http://www.a1community.net/t5/Unser-Projekt-Mein-A1-einfach/ct-p/ideas-pj1
[41] http://www.a1community.net

collection is not required. Whereas details on community members - the so called 'Leader Board Page'[42] - might change, the collection date stamp (24.9.2013) is worth mentioning.

In order to include all relevant postings on Facebook that refer to the idea-contest 'Mein A1 einfach machen', the data set includes postings that go back to November 2011 to the project start. The internal data sources were collected in October 2013 and include data - i.e. ideas and submissions - that were created and documented during 2013.

The corporate data was collected by exporting data from the idea management tool the one side, and manually collecting the innovation workshops documentation from other online resources otherwise. The sources were approved and provided by counterparts at A1 Telekom Austria. In terms of corporate privacy, detailed sources that provide insight into organizational, strategic or systematic methods are not included in the thesis content.

After identifying the data sources, tools that are required for analyzing the content to be explored were identified. Various possibilities for internet data collection are enabled in the A1 Support Community. The data, in particular the postings and idea-submissions were collected through the Lithium API and RSS channels. Data required for analyzing Social Media assets was collected through the Facebook API. Web services and RSS channels provide formatted data, i.e. XML metadata or class interfaces and are beneficial for documents containing structured information. The public community data was collected with SQL scripts and optionally completed manually.

During the incremental data review, the project forum as well as parts of the idea contest threads were excluded from data processing because they merely include general project information or don't include relevant content data sets.[43] Eventually, the selected data sets and research proposals were studied and interpreted to evaluate the content of submitted ideas and solutions, as well the possibilities to incorporate external groups into the collaborative innovation process. This calls for addressing the right target group on the one side, but also addressing a large and diverse group of customers on the other side, in order to maintain the level of novelty and a vivid and dynamic community atmosphere. Finally, the influence of social media is added to the study.

The three corporate innovation approaches are described along the derived research questions in the following Section 5.3, while the study results to the research questions are each illustrated comparatively in Section 5.4.

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[42] Source: http://www.a1community.net/t5/ratings/ratingdetailpage/message-uid/45153/rating-system/idea_ratings#userlist
The total Leader board listing of data was collected.
[43] Excluded Content: Project Forum: http://www.a1community.net/t5/Projektforum/bd-p/ideastrialboard,
Phase 2: http://www.a1community.net/t5/Phase-2-CoCreation-Workshops/bg-p/ideastrialphase2
Phase 4: http://www.a1community.net/t5/Phase-4-Feedback-zum/bg-p/ideastrial-phase4

5.3   Case Study: Co-Creation from a Telecommunication Provider's Perspective

Following the success of Facebook, Twitter and Youtube in recent years, user-generated content and social media have drawn significant attention in electronic commerce. The *"social commerce"* is drawing increasing interest from the academic and industry in developing new theories and technologies to understand user-behavior and structures in social networks as well as extracting knowledge from the user-generated content and social media.

Hence, social media as well as crowdsourcing is studied in detail based on the example of A1 Telekom Austria AG, Austria's incumbent in telecommunication. Regarding the structure of the analysis - section 5.3.1 includes a perspective on A1's public crowdsourcing community and the idea contest *'Mein A1 einfach machen'* in particular. Second, the section includes the internal ideation approaches. A deeper insight into the internal tool-based innovation approach is provided in section 5.3.2, concluding with the internal 'offline' approach in section 5.3.3.

Figure 16: A1 Telekom Social Support Program (Lithys, 2012a)[44]

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[44] Image Source:
http://lithosphere.lithium.com/t5/image/serverpage/image-id/4670i8B03C263053AD72F/image-size/original?v=mpbl-1&px=-1

5.3.1   Co-Creation with Customers

A1's social support program including the crowdsourcing community was launched in 2011 and envisioned as a vital community for customers, available 24/7 all over the world - a constantly growing platform for co-creation and cooperation with users in various game workshops and interactions. The following table lists A1 Telekom Austria's social media channels, they are described in detail in the following.

Table 7: A1 Telekom Austria's social media outreach (own depiction)[45]

Type of channel	Link	Facts
A1 Blog	http://www.a1blog.net/	22 categories, 60 stories
Youtube	http://www.youtube.com/user/EinfachA1	2.553 followers
Facebook	https://www.facebook.com/A1Fanpage	272.402 page likes
Twitter - @A1Telekom	http://www.twitter.com/A1Telekom	2.639 followers
A1 Support Community	http://www.a1community.net/	160.000[46] members

When compared to the competitors in the Austrian telecommunications market, A1 holds the leading position with a Facebook fan-share of 59 percent (Lithys, 2013b). On Facebook, three fulltime support agents provide fast and exclusive customer support, further two agents are responsible for product-related postings, special offers or news. A1's social media channels are linked and provide target-group oriented content, such as special offers, lotteries and product information particularly for the youth target group. A1's most popular age group on Facebook is formed by 18 to 24 year-olds[47].

A1 Telekom Austria's Facebook page has reached 250.000[48] likes in May 2013 and counts around 272.400 page likes and 3.400 people talking about this in September 2013[49]. It is a direct point of contact for customers as well as other visitors and counts as the largest community page among communication companies in Austria. Besides Facebook, A1 is represented on Google+ as well as on Twitter, which is used as a channel for distributing company news as well as servicing support requests. By integrating the A1 Support Community into the Facebook Fan Page, the technical functionalities as well as the content

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[45] Source: content channels and profile pages unless otherwise specified, Date: 24.9.2013
[46] Source: http://www.a1.net/newsroom/2012/05/einfach-ausgezeichnet-%E2%80%93-a1-community-triumphiert-beim-deutschen-preis-fur-onlinekommunikation-in-berlin-und-beim-internationalen-lithy-award-in-san-francisco/
[47] Source: https://www.facebook.com/A1Fanpage/likes, Date: 24.9.2013
[48] Source: http://www.a1.net/newsroom/2013/05/250-000-gefallt-das-a1-hat-jetzt-mehr-als-eine-viertel-million-fans-auf-facebook/
[49] Source: https://www.facebook.com/A1Fanpage, Date: 24.9.2013

and new community members were opened to the established fan base on Facebook. Furthermore, the A1 Blog as well as the A1 Support Community postings and the FAQs[50] are integrated via tabs into the Facebook page and are two further tools to support the customers around the clock (Source: A1 Facebook Fanpage[51])

The A1 Blog provides product information, device and app reviews and other stories. It is deeply linked with the A1 Support Community. Moreover, potential bloggers are addressed and recruited in the A1 Support Community and on Facebook and can actively create blog content, i.e. device reviews, smartphone tests, app recommendations as well as tips and tricks regarding the A1 product and service portfolio. Besides games and special offer lottery games, A1 organizes competitions across all social media channels, involving customers in diverse idea-generation processes. A great example is the "Sony Xperia go outdoor smartphone test". Community members and Fans were invited to design the testing screenplay and eventually could win a monetary price i.e. a smartphone device. The co-creation process included community voting and resulted in a YouTube video with around 1.427.000 views (A1 Sony Xperia, 2013).[52] Further, A1 is the only telecommunication provider in Austria with a branded YouTube channel (Lithy, 2012a), and provides short movies about products and solutions as well as in-house produced A1 video guides and tutorials - these are viewed up to around 252.508 times (Source: YouTube).

The contests and social commitment on the Facebook page intensify the relationship between A1 and its fans and enforces a strong attachment to the brand. Eventually there is a strong community commitment of the A1 fans as they help other customers and share their experience with A1, resulting in exchange of experience or even problem-solving among A1 customers. The following section provides a deeper insight into the A1 Support Community.

5.3.1.1   A1 Support Community

A1 Support Community is supported by Lithium community software and was initially launched only after 40 days of development and three days of beta testing with around 450 postings of 16 community member testimonials (Lithys, 2012a). Ever since, it has been a growing platform, reaching an extraordinary growth rate of 270 percent of community requests since its launch (Lithys, 2013a). The community was launched and integrated into the Facebook page as well as to the A1.net website, providing user-generated content directly on the company's website. During 2012, the platform was further enhanced with features and interactive events and contests (see Figure 17) .

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[50] ... Frequently Asked Questions
[51] https://www.facebook.com/A1Fanpage, Date: 6.4.2014
[52] Source: http://www.a1blog.net/2012/07/09/a1-sony-xperia-go-outdoor-challenge/, Date: 8.11.2013

Besides the cooperation and co-creation with customers in a rather gaming atmosphere, A1 Support Community acts as a further 'front door' channel for customers of A1 - its purpose is to generate a high substitution rate[53]. In 2012, a real substitution value of 25 percent was reached. This sums up to around 168.000 saved interactions - such as community postings and search requests- during the period of one year. The community provides a notable case reduction with the use of efficient engaging processes: *"A remarkable 26 percent of the community users found their solution within in the first minutes of their visit"* (Lithys, 2013a).

Figure 17: A1 Support Community launch process (Lithys, 2012a)[54]

All social media channels or pages were modified to provide a look & feel as part of the A1.net portal and not to disturb the users' perception of a common portal experience. The HTML framework that provides the portal look & feel was one of the preconditions of the community presentation. Eventually, the existing A1.net framework was linked with the flexible HTML construct provided by Lithium, enabling content sharing and embedding YouTube videos into the platform (Lithy, 2012a). Since content sharing is as crucial for a vital community, social media sharing buttons such as Facebook, Google+ or Twitter were implemented into user postings as well.

Eventually, it should be noted that the community activities push the digital service shift by: reducing the development and beta testing expenses and reaching a 25 percent real substitution value and *"up to 16.000 reduced support calls and emails per month"*; as well as an 80 percent crowd ratio[55] whereof 20 percent of the content is created by the most active users, i.e. Super Users (Lithys, 2013a).

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[53] Legend: *"The Real Substitution rate shows how many of our users come to visit the community without contacting any other service channel we offer – in other words: how many users perceive the community as primary service channel." (Source: Lithys, 2013a)*
[54] Image Source:
http://lithosphere.lithium.com/t5/image/serverpage/image-id/4672i5975B0DBF3097650/image-size/original?v=mpbl-1&px=-1
[55] Crowd Ratio = percentage of user-generated content

5.3.1.2   Lead (Super) Users

To increase customer satisfaction, A1 involves 'Super Users' in service and product development processes to support other customers and the company. These users are comparable with von Hippel's Lead Users approach, as they 1) proactively distinguish product or service needs long before these enter the markets, and 2) often develop such products or services on their own *"because they can't or don't want to wait for them to become available commercially"* (von Hippel, 1986).

Even the launch of the A1 Support Community has been shaped by the community, namely 16 selected users were involved into beta testing activities and feedback on functions and appearance, resulting in attention to small bugs that would not have been found without the support of SuperFans in this short time. SuperFans (Super Users) of the A1 Support Community build an essential part of the entire community concept. They are particularly dedicated and competent customers, helping other community members and highly volunteering their private time and commitment. As often described in literature, community members differ in age, gender, educational background, interests, etc.. Members of the A1 Support Community reach from a student from Salzburg to a professional application developer from Styria. In particular, A1 was awarded the 'Lithys Best SuperFan Story' in 2012 for co-creation with Simon, a 15 year-old boy and very committed community member. After attending a design workshop, Simon wrote 150 posts and got 56 kudos in the community, and eventually got hired by A1 to support the team (Lithys, 2012b).

Since the community launch in November 2011, the community KPI values are increasing steadily. For example, during the first three months, the amount of posts per month has almost doubled, the average time spent by Super Users in the community has tripled and the crowd ratio has reached around 77 percent. A1 Support Community's CHI (Community Health Index) factor has more than doubled[56], indicating a healthy community. The CHI metric was developed by Lithium as a result of analyzing hundreds of community metrics and expressed opinions. It is a *"diagnostic and predictive metrics that most accurately represents the key attributes of a healthy community: growth, useful content, popularity, responsiveness, interactivity, and liveliness"* (Lithium Technologies, 2012).

A1 further enforces a positive atmosphere as well as motivation factors, gaming mechanics and gratification approaches (Lithys, 2013b) within the community by:

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[56] Source:
http://lithosphere.lithium.com/t5/image/serverpage/image-id/4686iB69CF4942EFA5A0F/image-size/original?v=mpbl-1&px=-1,
Date: 24.9.2013

- transferring online into offline events: some months after the launch of the online community, offline *'Community events'*, such as guided tours through the technology campus at A1 were initiated. Hereby, community members were accompanied by A1 Device managers and the A1 Social Media management team to meet personally and exchange experience and related information. Later, selected community members were invited to a *'Community photo tour'* to the Viennese zoo and equipped with the newest smartphones to test and review the quality of the cameras.

- providing exclusive boards, badges, ratings and rankings for Super Users as they were part of the initial concept of creating and launching the community, and promoting Super Users as moderators in order to show them respect and trust. Super Users are hereby able to contribute even more to the content and quality of the A1 Support Community.

- rewarding the most active community users (Super Users) for their outstanding contributions within the community with a symbolic *'Hero of the month'* Award.

This active exchange - both online and offline - between A1 and its community ensures that customer needs and ideas are exchanged in a direct and unfiltered way. During 2013 a new self service area was launched on the A1 website which was developed within the idea contest *'Mein A1 einfach machen'* (MeinA1, 2012a) during 2012 - a co-creation approach with community members. This project is studied in detail in the next section.

5.3.1.3   Idea Contest 'Mein A1 einfach machen'

In February 2012, A1 has launched the ideation project *'Mein A1 einfach machen'* in the A1 Support Community. The aim of this project was to redesign online services and a new self-care area in terms of co-creation with community members and potential customers.

Besides enforcing a positive atmosphere and a strong brand awareness through social media channels, customer experience is at high importance within A1 Telekom Austria. For the purpose of offering the best customer experience, A1 has involved the A1 Support Community into the development process of the new *'Mein A1'* self-care area on the website. Users were invited to provide new ideas and participate in the development and beta testing of products and solutions. In the first step, the community was invited to an idea-generation process. (MeinA1, 2012a) The provided ideas and solutions were then transformed into scribbles and prototypes, which were eventually reviewed and rated by the community in an interactive feedback approach before being incorporated into customer applications (Lithys, 2013b).

From A1's perspective (Lithys, 2013b), customer benefits include:1) the opportunity to take part in an innovation process, 2) possible realization of user ideas, 3) exchange of thoughts and ideas with other users, as well as 4) provided incentives for participating. On the other hand, the benefits on the company's side include: 1) direct communication with users, 2) interaction with the support community, 3) identification of consumer needs, and eventually 4) the opportunity to integrate consumers into the realization process. The project itself as well as the workshop outcomes were communicated in the community and promoted on the company's social media channels, such as Facebook.[57]

The project was technically enabled by Lithium's Ideas component, which supports crowdsourcing through idea exchange and by soliciting and identifying the best ideas. The invitational letter was posted in the A1 Support Community, saying:

> *"Dear Community,*
> *The team of A1 Support Community is convinced that pioneering online service can only come hand in hand with our customers. We therefore want to find new ways to collect your valuable inputs. Therefore, on February 17th [2012] we will start the project "Mein A1 einfach machen". In this project, you, dear members of the A1 Support Community, are experts and decision-makers of how future online services should look like. [...]" (MeinA1, 2012a)*

The preparation activities and the project setup have started some months before the external project kickoff and communication. The total project duration was eight months, the external project was set up in four phases (MeinA1, 2012b):

- Phase 1: *Idea generation and project sharpening*, including the introduction and a detailed project scope. In this phase, all members of the A1 Support Community were invited to submit ideas and proposals, as well as to comment and rate other submissions. The best rated submissions were selected for implementation in the later phases.

- Phase 2: *Co-creation Workshops*, including a prototype concept. Ten community members were selected to support the A1's core team and co-develop the prototype. The workshops were organized by A1, including participants from different departments as well as customer experience and design experts.

- Phase 3: *Feedback on the Prototypes*: the outcomes from the co-creation workshops i.e. the developed prototype was presented to the community. In this phase all community members were invited to comment and rate the results.

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[57] The project status was communicated on Facebook six times

- Phase 4: *Prototype Release & Polishing / Feedback on the Project*: this phase included a revision of the prototypes according to the community feedback and a review feedback session back to the community. Further, the community members were invited to comment on the entire project. The earlier selected core community members were eventually invited to support the core team members during the implementation and incorporation project during 2013.

5.3.2 Co-Creation with Employees

During 2012, various prototypes and web-based crowdsourcing tools were tested internally in different departments, including network or information technology-related groups and teams, sales and solutions, customer service, or even human resources. Hence, a centralized tool that is available to all employees company-wide was targeted and conceived by end of 2012.

The concept was based on established crowdsourcing tools on the one side, and best-practice approaches from other telecommunication providers on the other side. For example, the concept of Hyve - the innovation company was evaluated. Hyve is one of the leading innovation and idea-management providers in the German-speaking countries and offers various ways of corporate crowdsourcing implementations. Further, Hype Innovation, one of the global leaders in end-to-end innovation management software and innovation solution providers has been selected as a potential partner. Also, many other known and unknown out-of-the-box and customized solutions have been shortlisted. Such innovation management platforms enable inventors to engage in business-driven idea challenges, inviting them to submit, collaborate, and vote on ideas for new products, enhancements, cost-saving initiatives, and business process improvements. Capabilities of such crowdsourcing platforms reach up to idea evaluation workflows and decision-making tools, and support the transforming of ideas into actionable results and drive sustainable innovation across organizations.

Following the first step, two examples of crowdsourcing by other telecommunication providers are mentioned particularly to point out the potential of crowdsourcing in this industry by looking at the competitors' best-practice:

Deutsche Telekom: In 2011, employees submitted close to 11.000 suggestions for improvement using the genial@telekom ideas platform, which was introduced several years before. The savings generated by these improvements came to 116 million Euro and 244 registered patents in the reporting period. (Deutsche Telekom, 2011)

genial@telekom. Ideas management.

Modern ideas management on the advance.
In 2011, the number of patent applications stood at 244.

	2008	2009	2010	2011
Suggestions for improvement	7 295	5 592	10 498	10 831
Savings in million €	141	122	136	116

Reporting against standards.
Employee involvement is encouraged via the genial@telekom ideas management platform.
This data is relevant for criterion 14 (Employee rights) of the German Sustainability Code.

Figure 18: Deutsche Telekom Ideas management (Deutsche Telekom, 2011)

Swisscom: In 2011, the company has integrated an ideation platform on the Swisscom Labs website and opened the innovation process in order to better meet their customers' needs (Swisscom Community, 2011). Hereby, website visitors as well as Swisscom customers can be part of the innovation process and share their ideas and concepts directly with Swisscom's innovation team. Eventually, the collected ideas are rated, commented and developed further by other users. Concepts and proposals that were best-rated by the community and show a sufficient potential are followed and implemented by the company on the one side, and on the other side the Swisscom innovation team also presents their own proposals and concepts and test co-develop these together with the community.

The telecommunication industry has shown a great potential by applying crowdsourcing and hosting idea-contests and product development and co-creation platforms. Some of the successful examples of crowdsourcing initiatives in this industry are: Cisco's iPrize, Nokia Concept Lounge and Beta Labs, LG's Design the future, Community Support (analogue to A1's support community) at Bouygues Telecom in France, Vodafone's Betavine and many other platforms.[58] However, most of these initiatives are customer-oriented and focus on novel ideas - leaving only a small percentage of practicable and feasible ideas that are eventually realized.

When dealing with internal crowdsourcing, it is important to mention, that the submitted ideas and postings should focus on improvements and issues that increase the company's efficiency and provide a better approach to an existing situation in the company. The following figure describes the internal idea management (i.e. ideation) process at A1:

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[58] Source: http://crowdsourcingexamples.pbworks.com/w/page/16668397/Brand-sponsored%20crowdsourcing%20initiatives
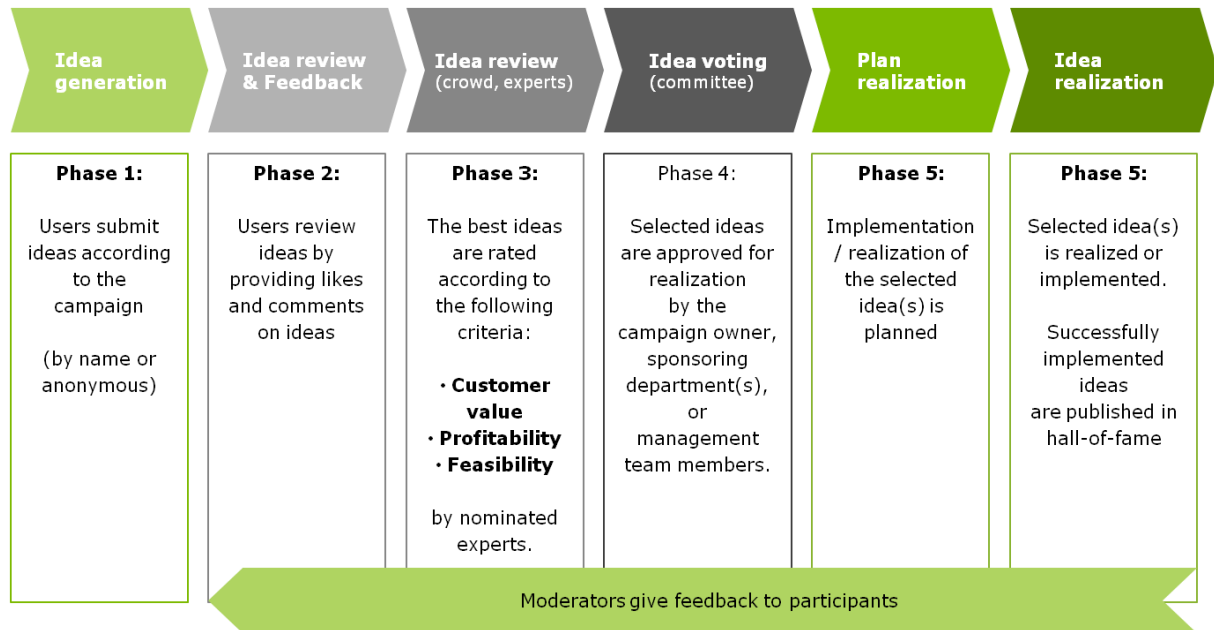
Figure 19: A1 Idea Management (Source: A1, own depiction)[59]

The first three phases of the ideation process were implemented in the online idea management platform and mapped to the illustrated process. Idea generation, Idea review & Feedback, as well as Idea review by experts and the crowd (i.e. participants and site visitors) are therefore exclusively processed in the online tool, leaving out other communication channels or platforms. The second part of the ideation process is yet supported by common office tools (e.g. sheets and presentations) and other corporate tools or communication channels. Eventually, the best ideas are presented to and reviewed by the campaign owners, related departments or members of the management team. One or more ideas are selected for implementation and published in an internal best-of listing afterwards. These listings include a short description of the idea as well as the name of the idea-provider (unless the idea was submitted anonymously). It is available to all employees and is similar to intrinsic incentivation as described in literature. Optionally, monetary prices are awarded to outstanding ideas and add up to the incentive-system as extrinsic motivators.

The idea management tool (i.e. platform) was implemented in a lean approach by customizing an open source solution and adjusting it to the corporate design. Besides the idea submission form, the voting and commenting features, as well as campaign promotions and further information; the tool was extended with basic exporting and archiving functionalities. Yet, the tool does not provide a professional or automated community management, but a fulltime employee is managing and moderating the process and provides feedback to all participating parties.

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[59] Source: The corporate data was approved and provided by counterparts at A1 Telekom Austria. In terms of corporate privacy, details that provide insight into organizational, strategic or systematic details are excluded.

Unfortunately, only a small percentage of employees particularly deals with innovation or ideation on a daily basis. Eventually, the innovation process within A1 is set up as a lean process and involves numerous employees from different departments - a group of *'peripheral inside innovators'*[60] who generate new ideas based on self-motivation, engagement, intrinsic interest, confidence, and even though they are not involved into it on a daily basis. Beyond that, a virtual network of employees across departments is existent, focusing on trend and market research, innovative technologies or benchmarks and best-practice from telecommunication industry.

Before implementing the online idea management tool in A1, several approaches were passed through - e.g. innovation management tool trials and prototypes, such as the Red Square tool on the one side, or common Excel and SharePoint sheets and charts on the other side. Eventually, one of the main driving factors for implementing the corporate idea management tool was the need for a centralized, transparent idea base available and accessible to all employees. The third, internal offline co-creation approach is described next.

5.3.3   Offline Co-Creation

Besides the ICT-tool supported innovation and idea-management approaches within A1, several 'offline' workshops are organized and hosted in the company. Some of these workshops include users and real customers; however within this thesis 'offline' ideation refers to innovation workshops with exclusively employee participants.

During spring 2012, three offline workshops, i.e. innovation and co-creation workshops that refer to future topics - have been hosted within one of the technology departments, including 86 participants from various groups and teams.

> *"[...] a moderated future workshop will take place, where we look ahead into the future and identify trends and their potential impact on our work. We hope to develop ideas for optimal positioning and maximizing the contribution our department to our company. Take your chance and share your creativity with us.. let's draw a picture of 2017 together!"* (Source: A1 Telekom Austria)

Technology departments are often perceived as innovative and ahead of other organizational departments. Moreover, identifying and consequently following innovation topics is one of the main issues of the corporate strategy, particularly in the technology divisions. Hence, such workshops are facilitated regularly in the company. Three of the workshops that took place in April 2012 are studied in this thesis. The agenda of the workshops is defined as following:

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[60] ref. to Section 2.4.2: *Innovators and Intrapreneurs*

Figure 20: A1 Ideation Workshop Agenda (Source: A1, own depiction)

The main goals of the ideation workshops are:

- Look into the future and identify trends (social, cultural, economic or technological)
- Identify new, relevant technologies
- Derive innovative ideas, as well as identify top three innovation topics.
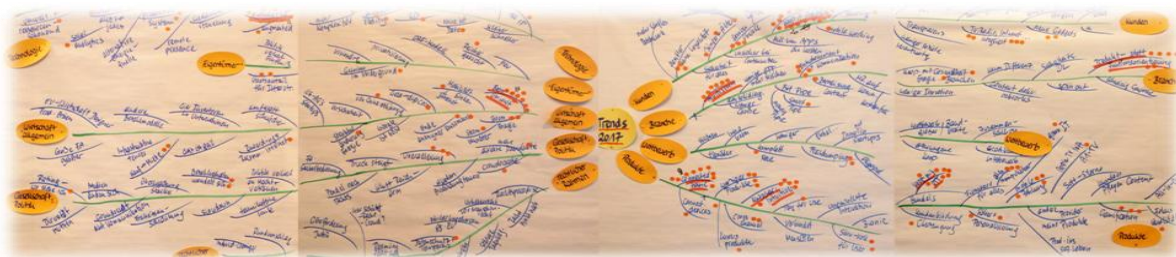
Figure 21: Ideation Workshop Trend-Mapping (Source: A1, own depiction)

Eventually, three top innovation topics from the workshops were selected and the ideas are in the implementation pipeline.

Compared to the two described ideation approaches that are supported by online tools, it is important to notice that the offline ideation workshops start with a rather mind-opening Impulse and trend key-note (Step 2) which is followed by a Brainstorming session (Step 3) on the following question *"Which Trendy are relevant for us in 2017 (five years ahead)?"*. Then, the identified topics are mapped to the social, cultural, economic or technological

trends and rated by the sticking points method, giving each participant a fixed amount of points (voting stickers) to be placed on the preferred ideas. Next, particular ideas that are based on the selected trends and topics are elaborated in group work and eventually presented to the other participants as well the management team.

Based on the three described innovation approaches and idea-generation methods, the differences in the process stages and the setup of the environment are notable. The different settings indicate following research topics to be studied in the remainder of the thesis:

- *The roles of different participants, review- and selection criteria, and the influence of social media;* as well as
- *The influence of sponsors (idea-seekers), lead users and further participants and their ideas and solutions during the ideation process.*

The next chapter includes details on the research framework, methodology and the derived research questions and hypotheses, as well as the results and conclusions of the case study.

5.4   Results

This section includes explanatory results and discussions of the three analyzed methods. The remainder of this section is organized as following: 1) analysis of the submission criteria and commercial feasibility of the submitted ideas; 2) [Lead] User participation and behavior the group, i.e. community members, super users as well as idea-sponsors; and finally 3) exploration of the influence of social media on the co-creation activities and community building possibilities.

5.4.1   Commercial Feasibility of Ideas

The question if there is a connection between the definition of submission criteria and the commercial feasibility of the submitted ideas is discussed in this section.

A) Co-Creation with Customers

In order to answer the question if the submitted ideas are in accordance to the criteria catalog, the content of the submitted ideas was studied in terms of a text analysis as well as a rating review. The submissions were reviewed and subsequently interpreted on how they were commented and rated with *'kudos*[61] by the other participants and community members.

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[61] To give somebody *'kudos'* is a term that one uses to acknowledge a job well done in terms of a bonus point. Kudos are best awarded virtually, during instant messaging or other online conversations.
Source: http://www.urbandictionary.com/define.php?term=kudos

If the ideas were observed on a timeline (see Figure 22), the distance in both kudos and comments between the first and last submitted idea is clearly notable. It is further important to note that the first two ideas take more than 50 percent (17 out of 32) of the given kudos. The second idea is rated best with a total of ten kudos, whereas none of the ideas has remained uncommented or without kudos.

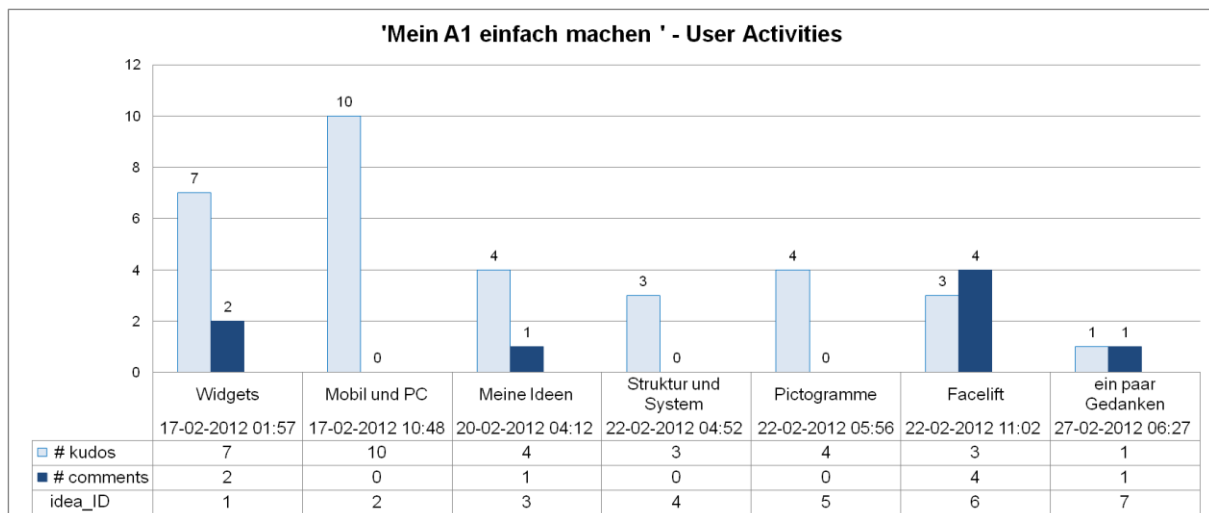|	Widgets	Mobil und PC	Meine Ideen	Struktur und System	Pictogramme	Facelift	ein paar Gedanken
	17-02-2012 01:57	17-02-2012 10:48	20-02-2012 04:12	22-02-2012 04:52	22-02-2012 05:56	22-02-2012 11:02	27-02-2012 06:27
# kudos	7	10	4	3	4	3	1
# comments	2	0	1	0	0	4	1
idea_ID	1	2	3	4	5	6	7

Figure 22: 'Mein A1 einfach machen' - Submitted ideas in a timeline perspective (own depiction)

The setup of the 'Mein A1 einfach machen' project included a set of guidelines for the idea-submission and the submitted ideas should meet the following criteria (MeinA1, 2012c):

- *An idea is of use for a sufficiently large number of customers* - i.e. it should positively affect a large number of customers with low internet experience.

- *An Idea is an online asset*: This project is limited to the corporate website A1.net, which means that only ideas that focus on online can be further implemented.

- *An idea is transformable to a website or web-application* - i.e. a service or an application on the 'Mein A1' page can be derived.

- *An idea is an improvement of existing online services*: Submissions that are improvements should state clearly what exactly is to be improved, expanded or combined.

- *An idea is a solution:* Further information and details on how to implement an idea or how a prototype should work or look like, as well as examples of other companies, sketches or pictures that illustrate a solution are optional and welcome.

Out of the seven extensively described solutions, one submission has missed the main topic to focus only on the particular website area of 'Mein A1'. Following a deeper insight into the comments of idea 6, it appears that the discussion refers to on-topic scribble details. Whereas this idea is described as not according to the desired criteria, six further ideas are aligned with the criteria. Therefore, evidence was found that strong and detailed submission criteria lead to properly fitting ideas and submissions. Further, all submissions indicate that each user has provided his or her personal ideas. Each submission comprises specific and individual suggestions for improvement that differ from the previous.

B) Internal online Co-Creation with employees

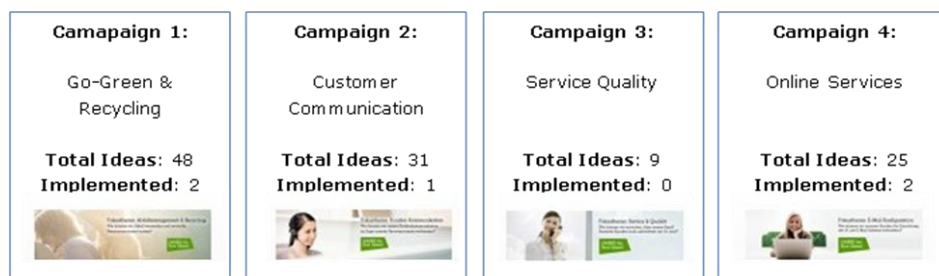The internal Idea Management approach includes four completed campaigns from 2013:

Figure 23: Idea Management Campaigns (Source: A1, own depiction)

Hereby the submissions were reviewed and subsequently interpreted on how they were commented and rated with likes by the other participants and visitors, as well as on how many ideas were submitted in total and eventually implemented. Five out of the 113 in total submitted ideas were realized. In general, all submitted have received Likes - from 1 (18 ideas) to 32 likes, at an average of 5.1 likes.

However, it is important to mention, that the amount of Likes is only a first selection criteria. All ideas are screened and reviewed, and then the best ideas are presented to a committee which further selects ideas to be implemented. This approach implies that the ideas with the most Likes are not necessarily being implemented (e.g. the Top 3 ideas rated by Likes were not implemented). The review process is hence similar to the guidelines and studies in literature. Analogue to the public idea contest, the internal idea management process is regulated by terms of agreement, as well as standardized criteria that the submitted ideas must meet. i.e. **customer value**, **profitability** and **feasibility**. Among the submitted ideas, only one submission has not met the prescribed criteria. Hence, the ideas are in line with the issued questions and campaigns. Eventually, it is important to mention, that the submission criteria appears just next to the idea input fields and are well perceivable on the idea management platform.
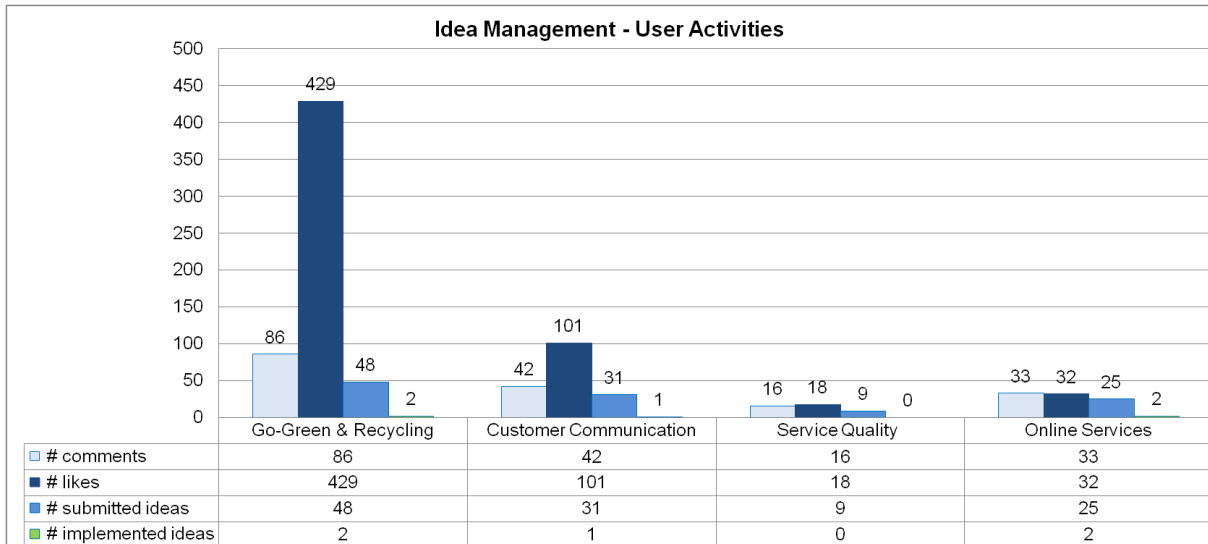
Idea Management - User Activities

	Go-Green & Recycling	Customer Communication	Service Quality	Online Services
☐ # comments	86	42	16	33
■ # likes	429	101	18	32
■ # submitted ideas	48	31	9	25
☐ # implemented ideas	2	1	0	2

Figure 24: Internal Idea Management - User Activities (own depiction)[62]

C) Internal offline Co-Creation with employees

While the crowdsourcing idea-contest and the idea management tools approach are based on practically no personal contact between the organizer and participants or among the participants themselves, the offline approach subsists on the personal interaction between the participants during the idea-generation process and allows forming, as well as readjusting the concepts by commenting and discussing the expressed ideas in real-time.

Offline Co-Creation Workshop Results

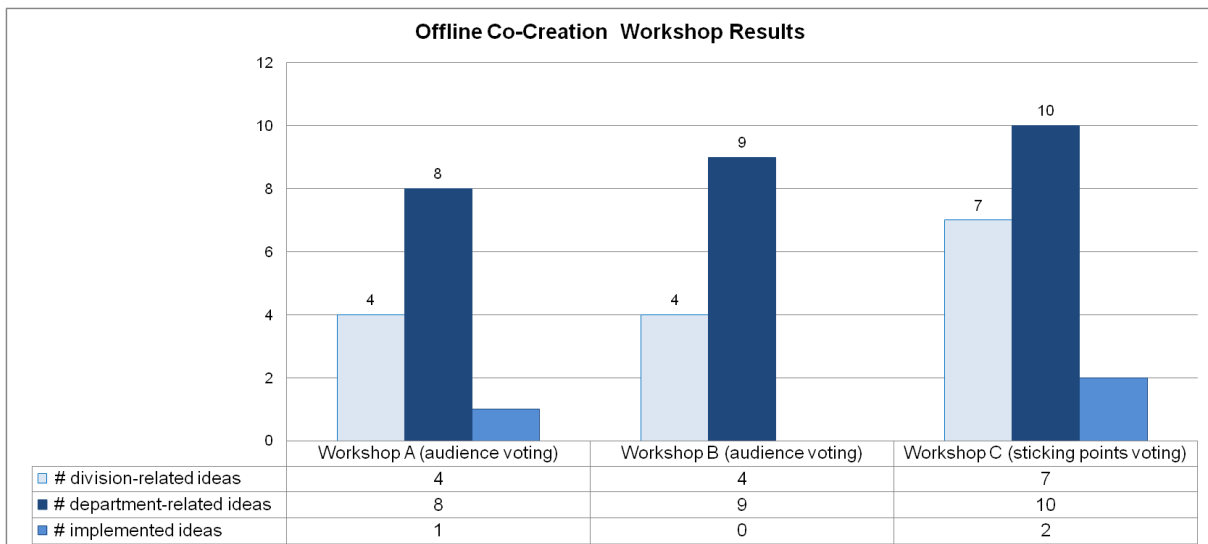|	Workshop A (audience voting)	Workshop B (audience voting)	Workshop C (sticking points voting)
☐ # division-related ideas	4	4	7
■ # department-related ideas	8	9	10
■ # implemented ideas	1	0	2

Figure 25: Offline Co-Creation Workshop Results (own depiction)

During the three workshops, 27 (8+9+10) ideas and innovation propositions were identified that meet general department topics, as well as 15 (4+4+7) further concepts that are related

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to the particular division or group of participants. The evaluation of the ideas in a second step varied within the three workshops: in two out of the three cases, the best ideas were selected by an audience voting, and in the third round, the ideas were rated with the sticking points method. Regarding the implementation of the ideas, two of the overall ideas were implemented into products or services, one idea has been tested as a trial, and eventually, four innovation topics were identified and transformed into line activities for the forthcoming months. Besides the personal interaction, the official invitational message that was explained earlier in the thesis[63] includes some important information about the criteria, namely the ideas should be 1) related to the future (core) business of the department, 2) related to the corporate strategy, and finally 3) related to maximizing the contribution of the department, which can be interpreted as profitability. Eventually, the announcement that the top three ideas will be further developed indicates additional criteria of feasibility. Hence, the main benefit of the offline approach is the possibility to readjust the expressed ideas immediately on the spot.

D) Comparison of the three approaches

The results of the first research question are summarized in the following table.

Table 8: Main Results: Commercial Feasibility of Ideas (own depiction)

Research Question	Co-creation with customers	Co-creation with employees	Offline co-creation
Definition of submission criteria	detailed definition	loose verbal definition, internal company context is a premise	medium definition level. internal company context is a strong premise
Set of defined criteria	• usability (usable by a large target group) • applicability (it is a solution) • feasibility	• customer value • profitability • feasibility	• related to the (future) core business • related to corporate strategy • profitability
Submitted ideas	7	113	27 ideas + 15 future topics
Fit of ideas	**strong**	**medium**	**medium**
Implemented ideas[64]	6	5	3 implementations + 4 line activities
Commercial feasibility	**high**	**medium**	**medium**

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[63] Ref. to Section 5.3.3
[64] Implemented submissions or ideas are considered as commercially feasible submissions

The main result regarding the first research question is that the level of specificity of the submission criteria is found as related to the commercial feasibility of the submitted ideas. Particularly in the case of co-creation with customers, the detailed submission criteria have to a strong fit of the ideas as well as a high commercial feasibility and further implementation. Compared to this, within the two internal co-creation approaches, the defined submission criteria is of a loose characteristic, and although profitability is among the defined criteria, only a very small number of ideas is implemented at a later stage. Also, the fit of ideas is lower than in the customer-oriented approach.

5.4.2   User Participation and Behavior

To answer the research questions about user behavior, the different (defined and undefined) user-roles as well as high-score lists were studied.

A) Co-Creation with Customers

Referring to the visibility or activities of lead users (Super Users) in the A1 Support Community, a list of 'Category Experts'[65] (8 users) as well as the 'Kudo High Score List'[66] (1.674 users) are clearly positioned on each community site. In general, the most supportive user i.e. a user with most kudos is elected to a 'Hero of the Month'. This topic is placed on the main community site and linked to a posting that describes a Hero's blessings. Super Users are further emphasized in the A1 Support Community by being provided with moderation rights. In particular, the following (lead) user types are notable in the A1 Support Community: white bay wreath 🏵; golden bay wreath 🏵; VIP Icon VIP ; silver VIP Icon VIP as well as the Moderator Icon MOD [67] All symbols are of different value and are awarded to community members by the A1 agents manually.

In particular, lead users were identified for the research by: 1) comparing the list of participants of the idea contest to the list of 'Category Experts' and the 'Kudo High Score List'; and 2) analyzing their community roles (i.e. icons). Among the 22 participants of the idea contest, 11 users were nominated as lead users based on the high score lists, and eventually 4 users were identified as Lead Users based on their roles and icons as described before. A deeper analysis of the submitted ideas and their ratings provided appearance that **postings of lead users are preferred** to those of other community members.

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[65] Source: https://www.a1community.net/t5/usernoderank/leaderboardpage/node-id/community%3A1
[66] Source: https://www.a1community.net/t5/kudos/leaderboardpage/timerange/all/tab/authors, Date: 27.9.2013
[67] Source and description: http://www.a1community.net/t5/Community-Events/Icons-in-der-A1-Support-Community-Update-22-April-2013/m-p/37949/highlight/true#M1

This issue was further analyzed by 1) comparing the amount of given and received kudos within the idea contest to the total amount of kudos by the participating users, as well as 2) comparing submissions by lead users to those of other users. Further, the data source was extended to the top 50 community members listed in the Kudo High Score list and tested in terms of: *how many out of 50 top listed members have a Lead User role in the community? -* resulting in: out of the 50 users, 20 are identified as Lead Users, whereas 14 out of the first 15 users are Lead Users, four are among the top 30, and eventually 2 are among the top 50.

Table 9: Results: Top 10 of the Kudo High Score List, September 2013 (own depiction)

Rank	1	2	3	4	5	6	7	8	9	10
# Kudos	2208	1990	535	462	**342**	270	**241**	**168**	151	132
Status	MOD	MOD	VIP	●	●	VIP	VIP	●	VIP	VIP

The interpretation of ratio between community members and A1 agents throughout the phases is insightful. Community members dominate both with their content and by their count, i.e. *Phase 1: 72,73%, Phase 3: 95,65%, and Phase 4: 62,50%*. Concerning this scores as well as Figure 26, it is important to highlight that the number of A1 agents (dedicated employees or idea seekers) during Phase 2 is unknown and therefore set to zero.

Participants Ratio

	Phase 1	Phase 2	Phase 3	Phase 4
■ # A1 agents	6	0	1	3
■ # other users	16	10	22	5
▢ # all users	22	10	23	8
A1 ratio	27,27%	0,00%	4,35%	37,50%
user ratio	72,73%	100,00%	95,65%	62,50%

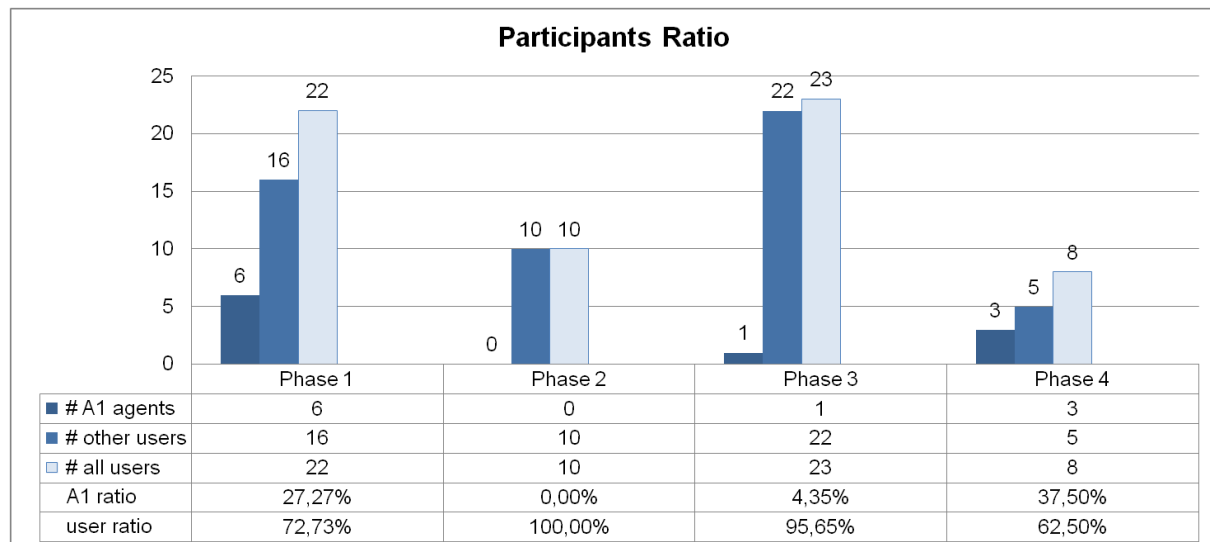Figure 26: Participants ratio 'Mein A1 einfach machen' (own depiction)

A1 Agents are further recognizable on the platform through the prefix {A1_} in their nicknames. Just according to the basic rule that crowdsourcing commonly involves a public crowd, further A1 employees cannot be excluded from the idea contest but have participated as well. These participants are counted as other users in this study.

B) Internal online Co-Creation with employees

Referring to the internal idea-contests, it is important to bring the organizational process (ref. to Section 5.3.2) to focus. In this setting, there are five types of participants of the ideation process: 1) the idea-sponsor, 2) the moderator, 3) expert (also participates in rating the best ideas), 4) active creator, i.e. author of ideas, as well as 5) passive visitor. The latter usually 'lurks' or reads the contents on the platform, sometimes voting (giving likes to ideas) or commenting on the provided ideas. As mentioned before, the tool supports the first phases of the ideation process, which means that the role of a moderator, active creators and passive visitors are existent. Experts are employees from different departments that follow a campaign and provide helpful feedback on the ideas. However, in contrast to the A1 Support Community, Lead Users are not (yet) existent or perceivable.

However, an interesting feature of the internal idea management tool is that users can post ideas anonymously, leaving the author only visible to the moderator, so that feedback can be provided to the user. The role of the moderator is not only visible on the platform, but also announced through the internal communication channel and other in-house notifications, such as newsfeed or news channel.

C) Internal offline Co-Creation with employees

In contrast to the online platforms and tools that provide or support mechanisms for identifying lead users, e.g. *Screening* or *Pyramiding* (von Hippel et al., 2008), it is difficult to identify Lead Users ad-hoc in an offline context if they are not previously known. However, besides von Hippel's Lead User characteristics - that: 1) lead users strive for new products or services long before they are launched on the market, and 2) lead users expect to find or develop solutions to their needs - a strong motivation for new innovations, dissatisfaction or the users' field of expertise are important indicators for Lead Users' potential. In order to compare the three approaches, opinion leaders and team leaders were classified as Lead Users within the offline approach.

As described before, the workshops were hosted in the technology department, which usually indicates a strong motivation for new innovations and cutting-edge technology. However, in this particular setting, the existence of Lead Users or the preference of their ideas could not be analyzed with netnographic research methods. Other qualitative research methods, such as Focus Groups, Interviews or Participant Observation seem more appropriate for identifying Lead Users in these environments. Hence, there are no appropriate answers for presence of Lead Users in this setting.

Regarding other roles within the ideation process, besides the employees as participants of the offline ideation workshops, one or moderators are crucial in such sessions. First, a member of the innovation team is responsible for the Impulse and Trend key note, Brainstorming and Trend-Mapping, and a member of the management team supports the Prioritization and Rating process. Therefore, different roles of this setting are pre-defined and rather the role of the idea-seekers or organizers is recognizable in this setting than the content provided by them.

D) Comparison of the three approaches

To answer the second research question about user participation and behavior, it is important to point out the main differences between the size and composition of the target groups:

- *Co-creation with customers*: involves a large target group of existing and potential users (>150.000 community members). The presence of lead users or experts is prominently visible.

- *Internal online co-creation*: includes a semi-large target group of employees (>2.500 active users) within a corporate setting. The presence of lead users is unknown, although some participants are identified as experts.

- *Internal offline co-creation:* involves a small, closed group of employees (< 40 participants at a workshop). The presence of lead users or experts is unknown.

Regarding the origin of an idea and its likelihood to be selected for implementation, interesting evidence was found: within co-creation with customers, the role of lead users is crucial, these users (Super Users) are prominent and strongly involved in the co-creation. Also, the ideas of lead users are generally preferred in the community, as well as in the particular idea contest.

Besides the described lead user participation, idea sponsors were explored as well and their role was found crucial to idea contests - especially in the customer-oriented approach. These users act as moderators who control and actively promote activities in the community and motivate members to contribute. Also, when comparing the two online communities (within co-creation with customers and internal online co-creation) - the fact that employees are also allowed to post anonymously can be put on the same level as alias and nicknames in the public community, keeping the author unknown to the other participants.

Further results to the second research question are summarized in the following table.

Table 10: Main Results: User participation and behavior (own depiction)

Research Question	Co-creation with customers	Co-creation with employees	Offline co-creation
Target Group	Large target group of existing and potential users (>150.000 community members). Experts or lead users are prominent	Large target group of employees (>2.500 active users) within a corporate setting. Experts are identified, the presence of lead users is unknown.	Closed small group of employees (< 40 participants at a workshop). The presence of lead users or experts is unknown.
Defined roles	• Lead users • active participants (incl. submissions) • reviewers • passive visitors (readers)	• idea-sponsor(s) • moderators • experts (participate in rating the best ideas) • active participants • passive visitors	• moderator • manager(s) • all other participants *User roles are pre-defined and clearly set before the workshop.*
Total active participants	22	estimated to 500	86 (25-35 per workshop)
Lead User ratio	50%[68]	unknown	low
Influence of idea-sponsors	*strong* influence and visibility in the community	*low or no* influence, no presence on the platform	*medium*, observing presence at the workshops
Role of Lead Users	Lead Users are prominent, their ideas are *preferred* to ideas of other users	Lead Users are not (yet) existent or perceivable[69]	Opinion leaders (i.e. lead users) are rather *passive observers* and the content provided by them is minor.
User behavior in the community	Community members are treated according to their status (e.g. Super Users own admin rights) Super Users and Sponsors (A1 agents) support other members and reply or solve most issues.	Idea sponsors and experts rarely visit the platform and have no interaction with the idea providers. Although there is no registration level and the access to the platform is granted to all employees, the number of active users is low (~20%).	During the workshop the defined topics or shared ideas are readjusted or adapted. During the selection phase, small groups (i.e. communities) are formed to review ideas of other participants.

Eventually, co-creation with customers clearly highlights the role of customers and involves these into the innovation process. Whereas the exploration of the internal online co-creation approach indicates that idea sponsors and experts not necessarily visit or join the platform, a closer look on the offline approach shows that all participants are required to actively participate and engage in the co-creation process.

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[68] The large ratio of lead users can be explained as following: participants of this particular idea contest were selected among previously identified lead users of the company, and further customers and Facebook fans.
[69] Lead Users are probably not perceivable because of the early stage (pilot) of this approach.

5.4.3   Social Media Tools for Communities

To answer the research question about social media, A1's public Facebook Page as well as the internal corporate communication channels have been analyzed.

A) Co-Creation with Customers

As described earlier in the thesis, the A1 Support Community is strongly linked to the A1 Facebook Fanpage, and both online and offline side-events were organized to foster the dynamics of the community. Because of the strong link to the Facebook community, the announcements that were posted to the Facebook page are evaluated in this section. During the project, six postings related to the idea contest were posted to Facebook, each of them describing the status of the project and announcing the next steps. Figure 27 illustrates details on the count of comments, likes and shares:

'Mein A1 einfach machen' Facebook activities

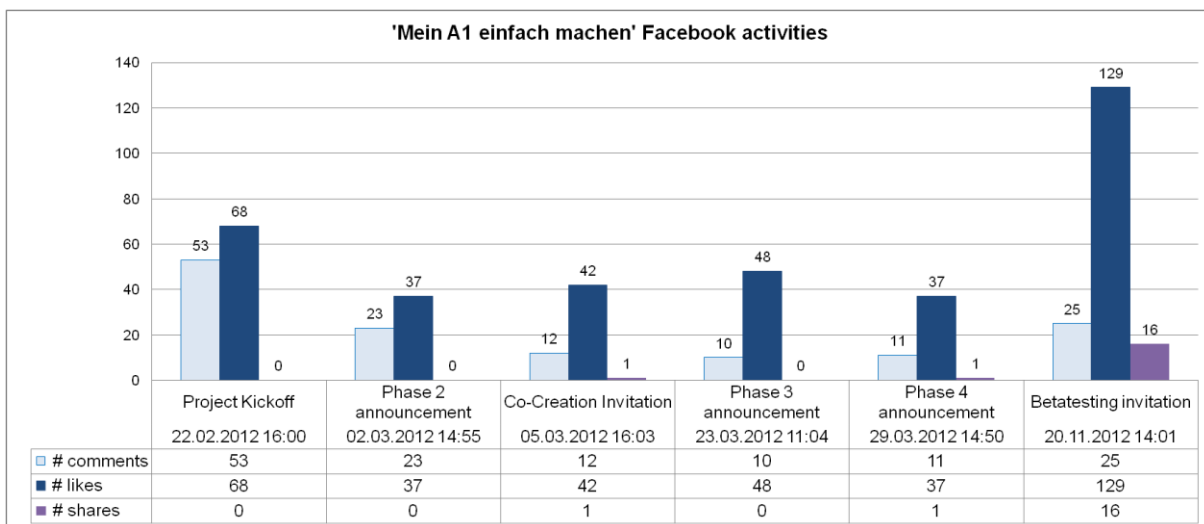|	Project Kickoff 22.02.2012 16:00	Phase 2 announcement 02.03.2012 14:55	Co-Creation Invitation 05.03.2012 16:03	Phase 3 announcement 23.03.2012 11:04	Phase 4 announcement 29.03.2012 14:50	Betatesting invitation 20.11.2012 14:01
# comments	53	23	12	10	11	25
# likes	68	37	42	48	37	129
# shares	0	0	1	0	1	16

Figure 27: 'Mein A1 einfach machen' communication activities (own depiction)

The final posting that includes the appeal for beta-testers invokes 129 likes and 16 page shares and therefore extends the number of potential participants. The four initial phase postings from March 2012 reach the following outreach compared to the total amount of postings that month: the invitational phase 4 announcement responds to the median value of 11 comments (two other postings are above median), the co-creation invitation in phase 2 responds to the median value of 1 share, and eventually, all postings are below the median of 73 comments. These insights prove that the target group can be extended via social media activities on the one side, but at the same time, users were incentivized to participate in the idea-contest with a €35 coupon.

B) Internal online Co-Creation with employees

Analogue to the A1 Support Community, the Idea Management tool provides social media features, such as commenting and liking posts and ideas, as well as interconnecting questions to other ideas and solutions. Further, campaign announcements that invite employees to participate and submit their ideas, as well as the hall-of-fame list of the implemented ideas reach out to a target group of around 10.000 potential participants across Austria who have access to the platform and the internal intranet news channels. The following figure illustrates the amount of likes and comments to the campaign announcements in the internal news channel and points out that the number of participants and novel users is increasing, as the platform (i.e. the process) seems to establish.
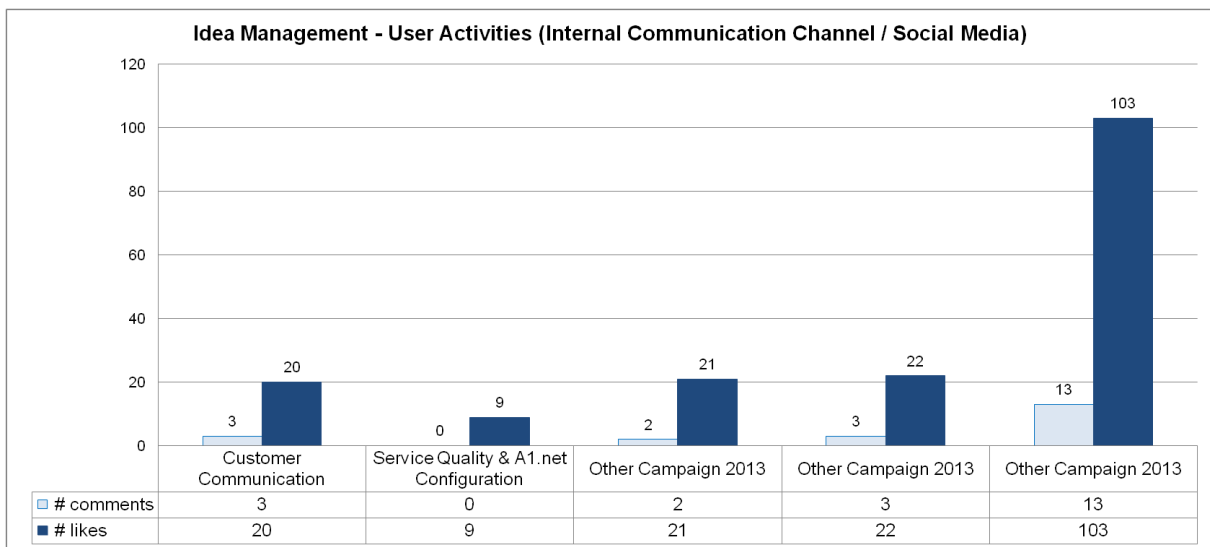
Figure 28: Idea Management communication activities (own depiction)

C) Internal offline Co-Creation with employees

In fact, during offline ideation processes, social media is *excluded*. Therefore, the hypothesis that social media positively supports crowdsourcing (i.e. idea management) activities cannot be confirmed. Instead, the personal interaction can be described as the offline social media and, as Figure 29 illustrates, even in offline workshops there is a potential for groups and community-building.

D) Comparison of the three approaches

Social Media support is interpreted as following:

- *Co-creation with customers*: is strongly supported by the Social Media tools, such as A1 Facebook Page, the corporate Youtube channel, A1 Blog, etc. and provides a large outreach to fans, potential customers and others.

- *Internal online co-creation*: is supported by the internal communication channels, including blogs, news channels or a newspaper magazine for employees.

- *Internal offline co-creation:* is obviously not supported by Web 2.0, the content - including comments, voting or sharing is done offline but documented with common office tools. However, community building is strongly supported hereby through the acquaintances between the employees.

Figure 29: Community building during offline ideation (Source: A1)

Eventually, it is important to notice that the common crowdsourcing and idea management tools all offer social media features, such as profile pages, interactive messaging and commenting, liking and sharing content, as well as tagging and participation statistics or high score listings. In general, the three approaches provide a rather gaming but working experience and reach out to a large group of participants by motivating them to be part of the 'game' and at the same time incentivizing them intrinsically as well as extrinsically, i.e. by providing monetary awards or coupons.

The main conclusions of the study are described in the next section.

5.5 Conclusions

Many factors lead to the a new socio-economic viewpoint on the active participation of consumers in the value creation or innovation process. On the one side, even though open innovation is often described as the outsourcing of internal research and development activities, the modern and interactive methods and tools - such as crowdsourcing - have been developed to identify new customer needs and technology trends or potential market channels. Such tools also enable a great opportunity to enrich the employees' mindset and connections with customers, partners, researchers, suppliers and other stakeholders. On the other side, Internet users have become interested in communities and their culture for a variety of reasons. Often they follow a particular goal that they want to accomplish, such as hearing others' opinions, locating the best deals, or learning how to properly use or repair things. Doing so will lead them to search engines as they 'browse' information sources. There, they will often 'lurk' (Kozinets, 2010), unobtrusively reading but not writing about their focal topic of interest. Thereby, *"literature has convincingly shown that identification with an organization strongly affects the willingness of individuals to engage in activities favorable for this entity"* (Franke et al., 2012).

In order to explore possibilities of co-creation, an analysis of mechanisms that foster a strong customer-company relationship was included in the study, with the following main conclusions:

- A **strong definition of submission criteria** is found as beneficial for the ideation process in general, as well as conductive for receiving commercially feasible ideas. In contrast to the online approaches, the personal interaction during the offline workshops can further support and readjust the idea-generation process, which then fosters the development of ideas with a **better fit** or **higher applicability or practicability**.

- The possibility to interact and adjust or change directions during the offline ideation workshops is further perceived as a factor that keeps the community **vibrant and committed**.

- Also, the **acquaintances among the participants** in the organizational ideation settings are perceived as beneficial and imply that the community dynamics can be supported by interactivity among participants.

- Further, evidence was found that **Social Media positively supports crowdsourcing** activities by enlarging the target group, or by keeping a track of the achieved activities and forthcoming process steps.

- Regarding different user roles, particularly the approach of co-creation with customers indicates the **importance of lead users** in online communities, when lead users become an essential part of the crowdsourcing process, as seen in the A1 Support Community.

- On the other hand, the **presence of idea-seekers** (sponsors), i.e. dedicated employees that moderate the crowdsourcing activities are needed during the ideation process to guide and coordinate the interactions - and should be designated as such.

In the field of **organizational crowdsourcing**, the submitted ideas should not miss the corporate strategy, goals or values. Further, the ideas are apparently improvement proposals and concepts that contribute to the internal company processes or processes that involve customers. Further, the profitability or emerging costs are important in the internal settings. Hence, it remains to be further studied, whether an (internal) idea management tool or an ideation workshop is the right setting for **breakthrough ideas** and innovations.

Furthermore, an organizational setting for crowdsourcing might be limited - on the one side by the office hours, and otherwise also by a permission to participate in idea generation process as a part of the job description or beyond it. The case study proves that the largest group of innovators in a customer setting are **outside innovators**, and **peripheral inside innovators** in the organizational setting. This result affiliates to the statement that outsiders have an unbiased approach to problems and beneficially contribute to crowdsourcing activities (Lakhani et al., 2006)

Integrating external partners in an internal corporate innovation and technology foresight process often positively affects the product development, for example by enlarging traditional idea and innovation generation. Eventually, crowdsourcing and crowd-based innovation methods are enabled by innovation tools and technologies, and allow large numbers of innovators to contribute. However, some approaches from the traditional, offline workshop methods are still missing and can be utilized in an online environment as well, such as **acquaintances-based community building** or the possibility to form the topics during an idea-contest.

6 Summary and Outlook

This chapter includes a summary of the thesis as well as the theoretical and practical implications, limitations, and suggestions for further research.

6.1 Summary of the Thesis

Major technological innovations from the twentieth century were often launched by large-scale industry operators. Thereby, a group of scientists or researchers worked thoroughly in a well equipped laboratory setting and refined inventions by developing new or modifying already existing products. However, tests and trials were conducted in within a closed system, meaning that the products or services were produced in large scales and offered on the market with no ensured market profitability or acceptance in advance. In contrast to the traditional approach, the 'new', interactive approach (Chesbrough, 2003; Thrift, 2006) that fosters customer-oriented products and services -that were developed in interactive innovation and co-creation processes with users- accelerates innovation by means of its openness, as it heavily relies on distributed knowledge flowing in and out of a company.

Openness within innovation processes increasingly helps to gather many more ideas and skills from external experts than it would be possible with a closed approach. A number of literature insights that result from this new view of innovation are presented and discussed in the thesis (Gassmann and Enkel, 2004; Reichwald et al., 2007, Bogers et al., 2010). In particular, the underlying business principle behind this openness is that today's companies can not only rely on their own knowledge and research, but need to use external intellectual property to advance their business model.[70]

Innovation processes are often supported by modern information and communication technology (ICT) tools. Furthermore, technical support systems and (web-based) collaboration platforms have become indispensable in various engineering disciplines. It is therefore expected and partially proven that public and private industry sectors, governments and other authorities place attention on understanding the optimized, interactive and effective innovation process approach. Eventually, various industries strive towards open idea sharing platforms and communities. The thesis therefore includes an analysis of organizational and cultural challenges (Sloane, 2011; Huff et al., 2013; Herzog, 2008; Soni, 2008) as well as

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[70] ref. to Chapter 2: *Towards Open Innovation*

motives (Bakici et al., 2010) and driving forces of user-involvement and co-creation in times of crowdsourcing, communities and innovation by users (Thomke and von Hippel, 2002; Reichwald and Piller, 2009).[71]

Innovation activities are also strongly supported by innovation toolkits, which provide a (mostly virtual) environment for developing and modifying ideas and solutions. For example, toolkits are available to customize a personal computer, car, household, or toys (Reichwald and Piller, 2009). Eventually, crowdsourcing and crowd-based innovation methods are enabled by innovation tools and technologies that allow a large number of innovators to create, co-design, share or transfer their ideas. According to literature, these effects clearly facilitate cross-organizational or cross-industrial collaboration and also create opportunities for (breakthrough) innovations.[72]

In situations where a company faces a challenge that it cannot or should not solve on its own, involving external support in terms of crowd-based innovation is meaningful (Boudreau and Lakhani, 2013). The most important factor to successful crowdsourcing is a vibrant, committed community, but involving people requires understanding their essential motivation to contribute and also rewarding them accordingly. Howe (2008) describes this as: *"ask not what the crowd can do for you, but ask what you can do for the crowd",* as well as *"offer the right incentives"* in his work.

From the crowd's perspective, the right rewarding and incentives is crucial in voluntary participation. An inappropriate compensation may force many participants to abandon the crowdsourcing activity, leaving a small group of actors with repetitive approaches and ideas. From a perspective of a large enterprise, involving the internal employees into idea-generation techniques and a mindset that enables new approaches or improvement proposals is as crucial as the external market and customer feedback. In many cases companies tend to incrementally optimize structures and processes and often remain stationary when operating their business in order to reach a better efficiency without impacting the daily operations. However, radical changes and transformation processes, as well as new or unconventional ideas often lead to breakthrough attempts with a notable business impact (Sloane, 2011).

When referring to innovation with crowds, it is important to point out the fundamental idea of Web 2.0[73] which enables collaboration and co-creation and is described as a system for *"harnessing collective intelligence"* (O'Reilly and Battelle, 2009) by combining the creative

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[71] ref. to Section 2.4: *Implementing Open Innovation* and 2.5: *Co-Creation: Turning Customers into Innovators*
[72] ref. to Chapter 3: *Innovation with Crowds*
[73] ref. to Section 4.1: *The Rise of Social Media*

work of multiple individuals - *"it's about taking open innovation to the nth degree"* (Carrero, 2009). Companies are becoming aware of the fact that crowds can potentially outperform individuals or groups of employees but are still struggling to create and obtain communities successfully.

As argued by Kaplan and Haenlein (2010), Web 2.0 extended by user-generated content is referred to as Social Media in literature. Social media can enhance open innovation initiatives by various means, such as creating a feedback platform to ideas and projects, providing business intelligence, or endorsing brand awareness in becoming a partner of choice. Five prevalent types of Social Media are discussed in this thesis: collaborative projects and wikis, blogs, microblogs, content sharing communities, as well as social networking sites.[74] Accordingly, Online Communities support the relationships between consumers and organizations, products, brands, etc., and further support the interactions and conversations, as well as the customer relationship management process. Furthermore, user behavior and diversity in online communities are studied by literature and analyzed in detail in this thesis, resulting in various user-behavior terms, such as *"Generation Y"*, *"X"*, and *"Baby Boomers"* (IBM, 2011), *"digital natives"* versus *"digital immigrants"* (Prensky, 2001), as well as the Technographics Ladder of seven online user types, including: *"creators", "conversationalists", "critics", "collectors", "joiners", "spectators",* and *"inactives"* (Forrester Research, 2010). Given the widespread use and access to the Internet, it is no surprise that the Internet has been discovered as an object of research and also as a tool to use for research. To stay current, research methods must follow as well. Therefore, the data was collected with modern internet and netnographic research methods (Kozinets, 2002).

Following the success of Facebook, Twitter and Youtube in recent years, user-generated content and social media have drawn significant attention in electronic commerce. The 'social commerce' is drawing increasing interest from the academic and industry in developing new theories and technologies to understand user-behavior and structures in social networks as well as extract knowledge from the user-generated content and social media. When referring to social media, Lindegaard (2011) states that: *"companies need a multi-target approach"* for innovation efforts, which requires an intersection between an *innovation community*, an *innovation ecosystem*, and finally *customers and users*. For example, companies are still strongly focused on their own presentation instead of representing their innovation contributors, whereas new community members are often not engaged immediately or in the right matter, which causes the risk of *"lurking"* and inactivity. Also, in terms of intellectual property, ideas that are (co-)developed in innovation communities are difficult to be attributed

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[74] ref. to Section 4.2: *Common types of Social Media*

to an initial author, so that eventually community owners seem to not focus enough on bringing value to the time that people spend their communities. Therefore, the incorporation of online communities into the internal innovation processes is studied in the thesis, particularly by analyzing user behavior in innovation communities and platforms as well as during offline innovation workshops based on the example of A1 Telekom Austria AG and the company's three different co-creation (i.e. innovation) process approaches.

The main results of the study include new insights into co-creation and idea-contests, particularly related to: 1) the commercial feasibility of submitted ideas, 2) the likelihood of ideas in relation to the characteristics of the idea-creators, as well 3) social media tools that support community building and other activities. Regarding the first question, a strong relation between the specificity of submission criteria and the commercial feasibility of the ideas was found. Particularly in the case of co-creation with customers, the detailed submission criteria have to a strong fit of the ideas as well as a high commercial feasibility and further implementation. Compared to this, the submission criteria within the two internal co-creation approaches is rather unspecific, and although profitability is among the requirements, only a very small number of ideas is implemented at a later stage. Also, the fit of ideas is lower than in the customer-oriented approach.

Within A1 Telekom Austria, customers are strongly involved into the corporate co-creation and product development process. Particularly in the A1 Support Community (i.e. the external co-creation approach), lead users are crucial and prominent participants. Also, the ideas and answers of lead users are generally preferred to those of other community members. Besides lead users, the role of idea sponsors was found crucial to idea contests - especially in the customer-oriented approach. These users act as moderators who control and actively promote activities in the community and motivate members to contribute. Surprisingly, within the internal online co-creation with employees, idea sponsors and experts not necessarily visit or join the community, which can be explained by the immatureness and at the same time openness of this process.

The thesis also includes best-practice examples of co-creation from a telecommunication provider's perspective.[75] For example, the introduced examples provide evidence for: 1) (significantly) better product evaluations by the customers, 2) a strong customer identification with the company, as well as 3) a behavior in favor of the company if co-creation with customers is applied. A supreme example of crowdsourcing in telecommunications is Yatango Mobile, an Australian provider using exclusively social networking as the interaction platform to interact, support and empower the customers.

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[75] ref. to Chapter 5: *Empirical Analysis*

One of the rudimental potentials of crowdsourcing and public idea-contests is the possibility to receive unknown ideas and maverick or pre-approved solutions from other (un)related fields. This study proves that the approach of applying or adapting known or pre-approved solutions to new problems particularly provided by 'outsiders' can be applied in an organizational crowdsourcing environment, i.e. where the submitted ideas need to meet the required participation criteria as well as the corporate strategies and values. In this setting, however, a rather (limited), incremental improvement seems more likelier than breakthrough-innovations.[76] Particularly, a group of *'peripheral inside innovators'*[77] (Huff et al., 2013) who engage in innovation activities, even though they are not innovators on a formal daily basis.

6.2   Contribution

As argued by Poetz and Schreier (2012), numerous literature studies reveal that commercially significant products were initially rather developed by users than manufacturers. In fact, user innovations are often found in sports, clothing, computer innovations or scientific instruments, and some of these products highly exceed the conventionally developed products in terms of sales (Ogawa and Piller, 2006). Hence, the results of this thesis can be rudimentarily compared to other literature findings: this work indicates that ideas that were developed and co-created by external users have a stronger fit-to-market and fit-to-customer as well as a higher commercial feasibility (based on the number of particularly realized ideas) than ideas that were developed in-house, whereas Poetz and Schreier (2012) argue their results for ideas that were created by users as *"higher in novelty and customer benefit, but lower in feasibility"*. Yet it is important to notice that this thesis includes a comparison of co-creation approaches with similar questionings, but a comparison of ideas by users and employees to the exactly same contest is not included. Similar to the experiment by Franke and Shah (2003) which is related to innovation activities of sports enthusiasts in communities, the fact that the helpful information or assistance is provided free of charge is confirmed in this thesis. However, Franke et al. (2012) also show that: *"potential contributors not only want a good deal, they also want a fair deal"* when participating in co-creation or idea contests.

Clearly, technology that has fostered crowdsourcing is still relatively new, but it opens up space for novel strategies and integration of the crowd to meet today's innovation challenges. This thesis contributes to innovation management research by providing insight into the idea generation stage, i.e. an early-stage of innovation processes within an incumbent. Also, the thesis includes arguments on organizational open innovation as debated by Enkel (2011).

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[76] ref. to Chapter 6: *Summary*
[77] ref. to Section 2.4.2: *Innovators and Intrapreneurs*

Specific conditions which should be considered during the ideation process are identified in this empirical study, such as involving a large target group of potential participants, as well as a group of (high-performing) lead users.

The fact that different user roles, e.g. idea-sponsors or lead users were observed as active participants during ideation leads to the proposal to deeper analyze the orchestration between idea-sponsors and idea-providers. In particular, there is still room for research, whether there is a strong influence by the idea-sponsors on the ideation process if they are recognizable or remain anonymous in the community, or if they are remunerated fairly (Franke et al., 2012). Also, literature reviews of online innovation contests have often shown a set of design elements (Bullinger and Möslein, 2010) that describe crowdsourcing or idea management processes. This purpose should be studied in deeper particularly from an organizational (corporate) perspective. Eventually, online communities and social media (i.e. social networks) have the potential to connect users and groups of users with companies, to provide discussion forums, blogs (or micro-blogs), communication tools, collaboration spaces, as well as to offer modern networking and work management tools that complement the traditional systems and processes.

From a commercial or managerial perspective, the interactions people are familiar with from online communities or social networks will soon be -or already are- applied in professional working settings. Besides identifying traditional activities that require a group of employees collaborating (e.g. traditional CRM versus "social CRM platforms"[78]), companies -and in particular the telecommunication players- need to pay attention to users' availability and location, in order to be able to engage users in real-time conversations and activities, or location-based services for diverse crowdsourcing activities. Essentially, no matter whether crowdsourcing and innovation communities are analyzed in an academic, commercial, entrepreneurial or social context, the topics merit further research.

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[78] CRM ... Customer Relationship Management

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