Please quote as: Zogaj, S.; Kipp, P.; Ebel, P.; Bretschneider, U. & Leimeister, J. M. (2012): Towards Open Innovation In Universities: Fostering the Inside-Out-Process Using Ideas Competitions. In: European Academy of Management Conference (EURAM), Rotterdam, Netherlands.

EURAM 2012 12th
SOCIAL INNOVATION FOR COMPETITIVENESS, ORGANISATIONAL PERFORMANCE AND HUMAN EXCELLENCE
6TH - 8TH JUNE 2012, ROTTERDAM | ROTTERDAM SCHOOL OF MANAGEMENT, ERASMUS UNIVERSITY

Towards Open Innovation in Universities: Fostering the Inside-Out-Process Using Ideas Competitions

Author: SHKODRAN ZOGAJ - Email: zogaj@uni-kassel.de
University: KASSEL UNIVERSITY

Track: 31. Open Innovation

Co-author(s): Philipp Kipp (Kassel University)
/ **Philipp Ebel** (Kassel University)
/ **Ulrich Bretschneider** (Kassel University)
/ **Jan Marco Leimeister** (Kassel University)

Please quote as: Zogaj, S.; Kipp, P.; Ebel, P.; Bretschneider, U. & Leimeister, J. M. (2012): Towards Open Innovation in Universities: Fostering the Inside-Out Process Using Ideas Competitions. In: 12th European Academy of Management Conference (EURAM) 2012 – Annual Meeting, Rotterdam, Netherlands.

Towards Open Innovation in Universities:

Fostering the Inside-Out-Process Using Ideas Competitions

Shkodran Zogaj
Information Systems, Kassel University
zogaj@uni-kassel.de

Philipp Kipp
Information Systems, Kassel University
philipp.kipp@uni-kassel.de

Philipp Ebel
Information Systems, Kassel University
ph.ebel@uni-kassel.de

Ulrich Bretschneider
Information Systems, Kassel University
bretschneider@uni-kassel.de

Jan Marco Leimeister
Information Systems, Kassel University
leimeister@uni-kassel.de

ABSTRACT

This paper demonstrates how IT-supported ideas competitions can be implemented within universities. In the context of open innovation, ideas competitions are used as a customer integration method serving companies as a profound basis for the leveraging of innovative ideas within innovation development. However, ideas competitions can also foster the inside-out activities of universities by means of encouraging students to develop innovative ideas which build the basis for the foundation of new businesses. By adopting the theoretical account proposed by Malone et al. (2010) as well as related work on ideas competitions, we comprise the various dimensions regarding the consummation of ideas competitions on university level. We then introduce a case study, which highlights the potentials of ideas competitions within university field. The case study shows that intra-university ideas competitions allow universities to stimulate the creativity of their students as well as to enhance inside-out activities.

Keywords: ideas competitions, education contests, open innovation, crowdsourcing, collective intelligence.

1. INTRODUCTION

Over the last decade, research and practice have consistently outlined the significance of the concept of open innovation within innovation management (Huizingh, 2011; Lichtenthaler, 2011). Thus, various companies have drawn on this principle within which an organization opens its innovation process for both an outflow as well as an inflow of ideas and knowledge to external parties (Blohm, Riedl, Leimeister, & Krcmar, 2011; Chesbrough, 2006). The former approach is referred to as the inside-out process of open innovation, and refers to external exploitation of internal knowledge (Lichtenthaler, 2011). On the opposite side, the so called outside-in process comprises the systematic integration of external sources in innovation development. Here, especially customers are regarded as one of the biggest resources for ideas for innovations (Bogers, Afuah, & Bastian, 2010; Kristensson, Magnusson, & Matthing, 2002). As a consequence, in the past, various methods have been developed that allow engagement of customers in the innovation process (Füller & Matzler, 2007; Lilien, Morrison, Searls, Sonnack, & Von Hippel, 2002).

One prevalent method of integrating customers into innovation development is ideas competitions. Ideas competitions are time-lined competitions, where an organization calls its stakeholders (e.g., customers) to submit innovative ideas regarding an underlying issue within a certain period (Bullinger, Neyer, Rass, & Möslein, 2010; Piller & Walcher, 2006). Within academic research, hitherto various facets of open innovation and the method of ideas competitions, in particular, have been scrutinized (Adamczyk, Bullinger, & Möslein, 2011; Duverger & Hassan, 2007; Haller, Bullinger, & Möslein, 2011; Leimeister, Huber, Bretschneider, & Krcmar, 2009; Piller & Walcher, 2006; Terwiesch & Xu, 2008).

Nevertheless, sparse research has been conducted concerning the implementation of ideas competitions or other open innovation methods within public organizations such as

universities. In view of the underlying potentials, a contention with the implementation of ideas competitions within universities seems to be indispensable. Ideas competitions on university level can be used for various purposes, i.e., they can be used to integrate students – who in this context can be considered as "customers" of a university – into the innovation processes of the university. Here, ideas competitions serve as a profound basis for the leveraging of innovative ideas regarding the advancement of existing services as well as the development of novel services offered by a university. More importantly, ideas competitions might also serve as an instrument to stimulate the creativity of students as well as to improve the teaching quality. By conducting ideas competitions, students have the opportunity to connect scientific concepts and their acquired knowledge with real-world applications in order to solve existing problems in a specific field (Adamczyk et al., 2011). By this means, very innovative ideas might arise, which build the basis for the foundation of new businesses, hence, fostering the inside-out activities of universities since potential spin-offs might emerge (Chesbrough, 2003). This aspect seems also to be crucial considering the fact that universities are regarded as relevant entities by means of transferring knowledge outside of their boundaries, which, in turn, can be internalized by companies (Lee, Park, Yoon, & Park, 2010).

There are few research articles that focus on ideas competitions within universities (McClain et al., 2005; Murphy, 2000; Pack, Avanzato, Ahlgren, & Verner, 2004); however, according to Haller et al. (2011), the majority of current ideas competitions still has room for improvement, as they are most often realized by means of a trial and error approach. Thus, further research is necessary to better understand this powerful tool. In the light of all this, the purpose of this paper is to present an approach to the implementation of ideas competitions within universities. By adopting the theoretical account proposed by Malone et al. (2010) as well as the conception presented by Ebner et al. (2008), we comprise the various dimensions

regarding the consummation of ideas competitions at university level. This paper follows a Design Science Research approach which has gained great popularity especially in the IS domain as a research method in which the development method itself or the outcome of the development process is the subject of study (Helms, Giovacchini, Teigland, & Kohler, 2010; Hevner, March, Park, & Ram, 2004). Hence, we first focus on the development of an integrated concept for the implementation of ideas competitions within universities before presenting the case of the "UniKat Business Plan Ideas Competition" that we conducted at a university in Germany to demonstrate our approach. A case study approach was chosen to attain insights into the exploitation of the potentials of intra-university ideas competitions. The results provide insights regarding the implementation and management of ideas competitions in public organizations such as universities.

The rest of the paper is structured as follows. In section two, we provide a theoretical background by briefly approaching the open innovation approach as well as presenting ideas competitions as a customer integration method. In section three, we first present related work in order to utilize previously generated insights for the subsequent development of our framework. Section four then outlines the UniKat ideas competition. Finally, we draw implications for the management of ideas competitions on university level before providing an outlook for future research.

2. THEORETICAL BACKGROUND

2.1 Open Innovation

As a result of globalization, companies as well as other institutions and organizations are increasingly faced with a strong international competition on different levels. Additionally, product and service lifecycles are getting shorter, while the creation of innovations is

simultaneously becoming more complex. Companies therefore try to widen their solution space by integrating external sources into their innovation processes in order to generate innovative solutions. This leads to a new paradigm in innovation management known as open innovation (Chesbrough, 2003). Whereas companies initially enacted a "closed" approach within which research and development were leveraged solely by internal resources, recently firms have adopted a more "open" approach to innovation by using knowledge, resources, or competencies within an extended network that particularly includes the competence of customers (Gianiodis, Ellis, & Secchi, 2010). This progress is illustrated in Figure 1.

Insert Figure 1 about here

Open innovation is characterized by three basic processes: the inside-out process, the outside-in process, and the coupled process (Chesbrough, 2003). The inside-out process of open innovation describes the external exploitation of intellectual property that has been generated within the boundaries of an organization (Gassmann & Enkel, 2004). In doing so, organizations try to commercialize their ideas faster than through their own development process. The licensing of intellectual property as well as the application of technology in analogous markets are two examples for an inside-out process. The externalization of internal knowledge can also be done by creating spin-off companies that address new markets or by giving the ideas to external partners for free.

Within the outside-in process, the underlying idea is to enhance the generation of potential perspectives or ideas for creating innovations flowing into the innovation process by opening up the company's innovation funnel (Huber, Bretschneider, Leimeister, & Krcmar, 2009). In

other words, the company gains more potentially innovative ideas due to the increase of parties that are actively involved in innovation development (Leimeister et al., 2009).

One major concept within the open innovation approach is the integration of customers in the innovation process. In the scope of customer integration, customers actively take part in the various phases of the innovation process by performing activities which were previously executed by the internal R&D. Customers are thus involved in idea generation regarding new products and services. They also develop concepts and prototypes and are even integrated in the commercialization. This approach is often referred to as 'interactive value creation' (Reichwald & Piller, 2009) or 'value co-creation' (Zwass, 2010). Meanwhile, various methods for customer integration have been developed: the lead-user method, toolkits for user innovation, innovation communities, and ideas competitions. The purpose of these methods is to acquire customer information regarding innovation ideas, initial or finished products or service concepts. Thus, by applying such methods, customers can be involved in different activities within the innovation process. For instance, customers can assess or even generate innovative product or service ideas, or they can be involved in the creation or evaluation of first concepts or prototypes.

In this study, our focus lies on ideas competitions which are usually used to collect a rich content of viable innovation ideas from customers (Hutter, Hautz, Füller, Mueller, & Matzler, 2011; West & Lakhani, 2008). However, we argue that ideas competition can also be used to foster an organization's inside-out process by means of encouraging internal staff and entities to develop innovative ideas which build the basis for the foundation of new businesses. Before examining this issue in detail, we first outline key elements and characteristics of ideas competitions.

2.2 Ideas competitions

Ideas competitions primarily come to use in the first stages of innovation development, where they are predominantly utilized to expand the source of potential new ideas. According to Walcher (2007), an ideas competition can be defined as an invitation of a private or a public organizer to a certain group or the general public as a whole to submit contributions regarding a specific topic within a predefined time period. At the end of the competition, the submissions are evaluated by a review committee, which, in turn, selects the rewarded winner(s) (Ebner et al., 2008). In ideas competitions, which build upon the principle of competition to enhance the quality as well as quantity of submissions, customers are motivated to produce a winning idea that is highly novel and possibly even unique (Ebner, Leimeister, & Krcmar, 2009; Haller et al., 2011). Hence, the underlying intention is to broaden the number of innovative and qualitative ideas, which can be used for innovation development (Leimeister et al., 2009). This notion is close to the concept of crowdsourcing, where the 'wisdom of crowds' is utilized to perform various value creation activities that are usually performed within a company (Erickson, 2011; Greengard, 2011; Surowiecki, 2005). Thus, ideas competitions also make use of the 'collective intelligence' of a crowd to attain valuable solutions (Ebner et al., 2008; Libert & Spector, 2007).

Within the last years, ideas competitions have become very popular in academic research and business practice. Prominent examples of successful ideas competitions are "Innovation Jam" by IBM (Bjelland & Wood, 2008), "Emotionalize your Light" by OSRAM (Hutter et al., 2011), or "IT Services for Tomorrow's Data Center" by Fujitsu-Siemens (Füller, Hutter, & Faullant, 2011). Table 1 depicts these and some other noted examples of implemented ideas competitions and research articles that focus on the corresponding contests.

Insert Table 1 about here

In their initial form, ideas competitions were run offline, with contributions submitted by postal mail. Nowadays, however, most ideas competitions are partly or even fully Internet-based (Adamczyk et al., 2011; Bullinger & Möslein, 2010; Hallerstede & Bullinger, 2010; Randolph & Owen, 2008). In this context, the participants are provided an Internet-platform, on which they are able to submit their innovation ideas and also discuss their ideas or evaluate other participants' contributions after submission deadline. By running Internet-based ideas competitions, organizers are able to attain a large base of participants and lower their expenditures as well as the effort of contributors at the same time (Leimeister et al., 2009; Piller & Walcher, 2006).

3. IMPLEMENTING IDEAS COMPETITIONS IN UNIVERSITIES: A CONCEPTION

3.1 Related Work

Ideas competitions in their basic form have a long-standing tradition within business economics as well as other domains. However, ideas competitions which have come to use in the scope of open innovation depict a relatively new field of research. Although they have received vast attention in the past few years (Bretschneider, Huber, Leimeister, & Krcmar, 2008; Ebner et al., 2009; Järvilehto, Similäy, & Liukkunen, 2010; Piller & Walcher, 2006), according to Leimeister et al. (2009) a categorization system for ideas competitions does not exist yet. An approach similar to ideas competitions are so called "innovation contests" or "innovation competitions." Bullinger and Möslein (2010), Adamczyk et al. (2011), and Terwiesch and Xu (2008), amongst others, use the term "innovation" contest instead of

"ideas" contest, since their focus "reaches beyond pure idea creation and potentially covers the entire innovation process from idea creation and concept generation to evaluation, selection and implementation" (Adamczyk et al., 2011). Nevertheless, insights gained in the field of "innovation contests" can also be used in the frame of ideas competitions. Based on systematic literature reviews, Adamczyk et al. (2011) as well as Bullinger and Moeslein (2010), present various design elements that characterize most innovation contests. Most of the depicted design elements can be adopted regarding the implementation of ideas competitions; however, not all of them. Therefore, by reviewing literature that focuses on ideas competitions in particular, we slightly changed Bullinger and Möslein's (2010) outline and adjusted it for the case of ideas competitions (see Table 2).

Insert Table 2 about here

The organizer, respectively, the entity initiating the ideas competitions, has to decide on the various aspects regarding the implementation of ideas competitions, such as topic specificity, degree of elaboration, target group, or contest period. Meanwhile, ideas competition can be conducted offline, online, or in a mixed way (Hallerstede & Bullinger, 2010; Piller & Walcher, 2006). As mentioned before, ideas competitions that are run online most often offer a community function where participants have the chance to connect and discuss with other participants (Haller et al., 2011). Furthermore, the timeframe and the number of persons forming one entity of participants has to be determined (Bullinger et al., 2010). Meanwhile, different kinds of rewards can be used to motivate people from the target group to participate in an ideas competition. Monetary rewards (e.g., cash prizes) are most common; however, non-monetary rewards (e.g., entrepreneurial support by experts) as well as a mixed form are also used in practice. At the end of an ideas competitions, the submitted ideas are to be

evaluated using two basic methods which can also be combined: evaluation of contributions by a jury consisting of experts, or by other participants of the ideas competition (peer review) (Carvalho, 2009; Ebner et al., 2008; Klein & Lechner, 2009).

The above described elements of ideas competitions represent the main aspects that are to be addressed when implementing an ideas competition within a university. Adamczyk et al. (2011) refer to ideas competitions that take place in a university context as "education contests." Such intra-university competitions allow students to invoke their knowledge acquired from courses at the university and utilize it by means of developing innovative ideas that might even evolve into real business concepts.

3.2 Elaboration of the Framework

In the frame of open innovation, ideas competitions represent an established customer integration method which is utilized to involve customers, particularly within the first stages of the innovation process (Järvilehto et al., 2010). Thus, they are applied to transfer the external knowledge of a crowd within the company; hence, fostering the outside-in process of an entity. However, we argue that ideas competitions can also be used to enhance inside-in activities of an organization in an indirect way, especially those of universities. In the frame of an ideas competition within a university, innovative ideas and concepts can be developed by participating students. Attractive rewards and the associated competitive character of ideas competitions motivate students to put forth an effort to create novel and marketable solutions, hence, building the basis for potential spin-offs out of universities. Considered on an aggregated level, in this connection the wisdom of a crowd (i.e., students) is used to foster the inside-out process of a university.

However, the question as to exactly how to implement ideas competitions within a university setting still remains unanswered. To address this issue, we first intend to set up a suitable framework for the implementation of such ideas competitions, hence, taking heed of the call of other researchers for accomplishing a more systematic approach to identifying a profound way of tapping into the wisdom of crowds, respectively the collective intelligence (Adamczyk et al., 2011; Haller et al., 2011). For our study, we draw on the framework presented by Malone et al. (2010), which is similar to ones that have been elaborated within the domain of organizational design (Kates & Galbraith, 2007; Malone et al., 2010). They suggest four dimensions that are important when designing any system for collective action: goal, structure/process, staffing, and incentives (see Figure 3). On the basis of an extensive examination of Web enabled collective intelligence, Malone et al. (2010) found that, despite the fact that there are various examples, all existing collective intelligent systems can be described by a small set of building blocks. These blocks can, in turn, be combined and recombined in various ways to design a system for collective intelligence. Using an analogy from biology, Malone et al. (2010) call the different building blocks as "genes" of collective intelligence systems and classify them using four issues: Who is performing the task? Why are they doing it? What is being accomplished? How is it being done?

Insert Figure 2 about here

In the following, we present the different elements as well as the associated building blocks of the framework, and subsequently adapt them to the case of ideas competitions within university settings.

Staffing: Who is performing the task?

Regarding the question as to who performs a given task, Malone et al. (2010) differentiate between the two blocks: *hierarchy* and *crowd*. The hierarchy gene refers to the case where an activity, i.e., a specific decision, is undertaken by individuals inside the organization. Usually, individuals or a group of people within the organization are assigned by someone in authority to perform a specific task. However, by hiring a subcontractor, the tasks may also be assigned to individuals outside the organization. On the contrary, if activities are realized by someone in a large group, without being assigned by someone in a position of authority, the crowd gene is enabled. For instance, in Wikipedia, articles are drafted and proposed by one person or a group of people (crowd); however, the decision whether an article is published on the website or not is decided by Wikipedia administrators (hierarchy). The Internet and its features enable the crowd to undertake more activities than ever before. Compared to the past, when crowds had limited possibilities for engagement (e.g., voting within an election), the Internet (i.e., Web 2.0) today makes it feasible for crowds to actively engage in the creation of various activities as well.

The interplay of the two genes, hierarchy and crowd, can also be demonstrated using the case of Threadless as an Internet-based design contest for T-shirts. Here, people from the crowd design T-shirts as they wish, and submit their design concepts to the platform, whereas individuals in authority at Threadless decide on the winning concept. A corresponding approach can be used when implementing ideas competitions within universities: The crowd, in this case, comprises all students of a university which have the possibility to submit ideas within the competition. The winner of the contest is, however, usually chosen by people in authority at the university (jury). These can be professors or training staff employed at the university. Furthermore, for ideas competitions that inherit the goal of stimulating the inside-out process, experts from the outside can also be hired by the university to be part of the jury.

This is due to the fact that practitioners from outside are well suited for selecting ideas and solutions that are marketable.

Incentives: Why do people take part in activities?

As previously shown, crowdsourcing actions are undertaken by the crowd or by people in hierarchy. However, the question as why individuals participate in specific activities remains unanswered. In this context, motives that incite people to become active need to be analyzed. In academic literature, various motives have been scrutinized regarding the participation of individuals in crowdsourcing systems (Hars & Ou, 2002; Hertel, Niedner, & Herrmann, 2003; Lakhani & Wolf, 2005; Leimeister et al., 2009). Malone et al. (2010) propose three genes which comprise the various motives on a generic level: money, love, and glory. For individuals, groups, or organizations as a whole, the promise of financial gain is a key motivator. Hence, the gene of *money* refers to monetary incentives, such as direct payments and cash prizes, bonuses, or promotions. However, people are not only motivated by financial interests. Research studies show that intrinsic motives such as enjoyment, altruism, socialization, or sense of belonging, are equally important (Hars & Ou, 2002; Lakhani & Wolf, 2005). The *love* gene refers to such kind of motives. The desire of recognition, e.g., by peers, is also an important motivator for people to submit contributions. In crowdsourcing systems, participants often try to make valuable contributions as they promise themselves acknowledgement from other participants (crowd) or even from people in the hierarchy.

With regard to ideas competitions, Leimeister et al. (2009) presented four basic motivations and the corresponding incentives that can be used in the frame of IT-based ideas competitions. We determined that all of the introduced motives might be applied in the context of intra-university ideas competitions. The (1) motive of learning Leimeister et al. (2009) address by using the incentives ‘access to the knowledge of experts,’ ‘access to the knowledge of mentors,’ and ‘access to the knowledge of peers.’ This motive can be assigned

to the gene of love, since students might be interested in not merely participating, but in developing the submitted idea into a marketable solution with the help of experts or mentors. The same applies for (2) social motives which can be satisfied by the 'appreciation by the organizer or peers.' Further, the motive of (3) self-marketing might also incite students to submit ideas. This motive represents the gene of glory, since it refers to 'career possibilities,' which can derive from active participation in a provided Internet platform that supports the idea competition. People in authority (either from inside the university, or experts procured from outside) can observe the conversations within the platform and might become aware of very active students, as the students are given the opportunity to enhance their profiles to signalize their competencies (Leimeister et al., 2009). However, for most students, (4) direct compensations distributed as prizes might be the predominant incentive (money).

As mentioned before, the jury, that determines the winning concept, consists of people from inside the university (employees, such as teaching staff) as well as of people outside the university. The motives of university staff for engaging in the planning and deployment of an ideas competition refer to the gene of money since they are paid by the university as employees.

Goal: What is being accomplished?

The third question that has to be addressed when implementing any crowdsourcing system is: What is being accomplished? In this context, Malone et al. (2010) outline two building blocks which refer to the goals of a crowdsourcing system: Create and Decide. All activities that imply a creation of something new can be assigned to the gene of *creation*. For instance, the writing of articles for Wikipedia, or the designing of T-shirts in Threadless relate to this gene. In contrast to this, in the gene of decide, the actors are to select or evaluate alternatives, respectively, contributions. For instance, in Wikipedia the administrators decide whether an

article is finally published or not, whereas in Threadless the people in authority decide which design concept is the winning one.

Applied on the case of intra-university ideas competitions, students create ideas according to the given theme or topic, whereas a jury has to decide which ideas are the most promising ones. However, when applying an IT-supported ideas competition, decision-making can also be transferred to the crowd (Hansen, Bullinger, & Reichwald, 2011; Möslein, Haller, & Bullinger, 2010; Witt, Scheiner, & Robra-Bissantz, 2011). In this context, the platform users could constitute the jury and select the winning contributions.

Structure/Process: How are the activities accomplished?

Finally, the question of how specific activities within a crowdsourcing system are accomplished has to be addressed. In traditional hierarchal organizations, this question would be answered by people in authority, who set up the processes and structures that lead to a defined goal. However, within collective intelligence systems, some of these decisions might be made by the crowd. Malone et al. (2010) state that when the crowd makes contributions and decisions, it has to be determined whether they are done independently or dependently. By relating the two building blocks 'create' and 'decide' with the two characteristics of 'independency' and 'dependency,' Malone et al. (2010) derive four genes that address the underlying dimension (structure/process): collection, collaboration, individual decisions, and group decision. If decisions are made independently, the gene of *individual decision* is addressed. On the other hand, the gene of *group decision* applies if decisions are made in coordination with others. Subtypes of the group decision gene are different decision-making mechanisms: voting, consensus, averaging, and prediction markets. Creation activities that are done in coordination with others constitute the gene of *collaboration*, whereas the gene of *collection* comes to use when individuals independently undertake creation activities.

According to Malone et al. (2010), contests in general are a subtype of the collection gene, since individuals or groups (consisting of several individuals) independently create ideas or concepts. Further, considering ideas competitions on a broader view, they also inherit the gene of hierarchy, since the selection of the winning idea has to be made by the jury on the basis of consensus. Hence, referring to the dimension of "structure/processes," ideas competitions exhibit two genes: collection, when the crowd contributes, and hierarchy, when decisions are made by people in authority.

Following the framework presented by Malone et al. (2010), we determined the main building blocks of intra-university ideas competitions (see Table 3).

Insert Table 3 about here

---

4. THE CASE OF "UNIKAT BUSINESS PLAN IDEAS COMPETITION"

4.1 Methodology

Given the lack of empirical research on the implementation of open innovation ideas in a university setting, our primary objective was to achieve better understanding of how, in this case, intra-university ideas competitions can be implemented. Studying the implementation of ideas competitions within universities and scrutinizing the potentials as well as the challenges associated with it demands qualitative research on the organizational level. The case study methodology is particularly useful for exploring new phenomena such as intra-university ideas competitions (Bittner & Leimeister, 2011; Darke, Shanks, & Broadbent, 1998). For a start, ee use the conception presented in the previous section without a claim of being

complete, as according to (Eisenhardt, 1989) the purpose of case study research is, in fact, an iterative examination of new aspects and phenomena that should not be limited by concrete preset concepts.

We present here the case of the "UniKat Business Plan Ideas Competition" that we conducted at a university in Germany which illustrates the implementation of intra-university ideas competitions in practice. The ideas competition was focused on the development of innovative business ideas and solutions. We designed and established the ideas competition and had the possibility to accompany the competition from its initiation to its conclusion.

4.1 Case Description

The "UniKat Business Plan Ideas Competition" was planned in cooperation with the administration of the university, whereby two main objectives were followed: (1) stimulate students to develop their own marketable ideas by using the knowledge and expertise acquired at the university, and (2) advance students' knowledge regarding the development of business solutions and strategies. A business plan ideas competition was intended to help meet both of these goals. This competition looked for promising ideas emerging from students at university who had the potential to be the basis of a successful company. Referring to the dimension of structure/process of the conception outlined in section 3, we thus use a competition as the activity of sourcing from the crowd (building block "how"). Further, regarding the dimension of staffing, we decided to choose only students, or teams of students, to perform the task (building block "who").

Below, we present the ideas competition by following the proposed process of Ebner et al. (2008). The adapted version of this process comprises four phases: awareness rising, idea generation, evaluation, and idea award ceremony.

Awareness rising: Within the phase of awareness arising, expert discussions took place with selected lecturers and other employees of the university to assure that this group of stakeholders assisted and accompanied the whole process. At this stage, the concrete approach for the ideas competitions was planned for the timeframe of the summer term of 2011, lasting for four months. Further, decision-makers agreed on the deployment of an Internet-platform in order to support the business plan competition. The business plan ideas competition started on April 1st 2011 with the slogan: *"Got a head full of ideas? Take action!"*[1]

Initially, an e-mail with corresponding information was sent to all teaching staff of the university. Lecturers from all faculties of the university were asked to announce the competition in their lessons. Subsequently, various communication measures were taken to advertise the business plan ideas competition, including sending e-mails and newsletters, posting information at related student networking websites, and distributing placards, flyers, and posters within the university.

In order to motivate students to participate, it was announced that students with the three most promising ideas would be offered cash prizes in the amount of 1,500 € (first place), 1,000 € (second place), and 500 € (third place). Further, we announced that all participants would be offered consulting and mentoring services regarding business formation. Hence, referring to the incentives for participating in the ideas competition (building block "why"), we address all three genes: First, money as a monetary incentive. But we suggested that students would also participate because they enjoy the challenge or have fun in solving business problems (love). Further, they might participate because of the consequent recognition by colleagues or other students, in case of wining the competition (glory).

[1] The expression „Take action!" alludes to becoming active in terms of starting an establishment.

Idea generation: The phase of idea generation describes the timeframe within which students were able to submit their ideas. Since the competition was set to last for four months, the submission deadline was July 31st. The students were expected not to submit plain ideas but to elaborate their idea into a marketable solution by means of developing a business plan, including the required elements (e.g., prognosticated market potential, business model, SWOT analysis, finance blueprint). Thus, referring to dimension of the "goal" of the presented conception, we determined that a finished business plan idea should be created (building block "what"). However, the concrete development of business plans is most often taught only in the study path of economics, and thus students from other fields (e.g., engineering, computer sciences, or architecture) might not have had the experience of writing an appropriate business plan. For this reason, all participants were offered consultation hours within which they had the opportunity to ask for advice and support from experts regarding their business plans. This consultation service, which was offered by employees of the incubation service of the university, was greatly utilized by participants. Thus, students were able to submit a business plan idea either as single work or as a group project, and submission could be made via offline-mail, e-mail or by using the provided Internet-platform (see Figure 3).

Insert Figure 3 about here

The competition website consisted of five parts: (1) Home, (2) News, (3) Forums, (4) My Profile, and (5) Members. In the "Home" section all information regarding the business plan ideas competition was provided, such as the information regarding the prizes, the evaluation, and the conditions of participation. The latest news concerning the competition, e.g., change of consultation hours, was displayed in the "News" section. In the "Forum" students could

discuss various issues regarding the business plan competition, as well as other related topics. Here, users could also get in touch with the organizing staff and consultants from the incubation service. “My Profile” displayed the profile of the registered user as well as an overview of own submitted ideas and comments. Finally, the “Members” section displayed all members registered on the platform. Up to the final weeks of the competition (July 2011), 69 students and nine employees of the university registered on the website.

Evaluation: By the end of the competition, 15 business plan ideas were submitted. Altogether, the number of participating students was 28. Eight submissions were single work, whereas the other seven business ideas were elaborated upon in teams. The sample was diverse with respect to the educational field, as seven faculties of the university were represented within the sample (economics, computer sciences, agriculture sciences, human sciences, cultural sciences, social sciences, and engineering).

All submissions were evaluated by a jury consisting of employees from the intra-university incubation service and of successful entrepreneurs cooperating with the university. In the first round, the five least promising business ideas were excluded from further evaluation; in the second round, the students representing the remaining ten concepts were invited to present their business ideas in front of the jury. Finally, the jury decided on the three wining concepts (building block “what”). Thus, the gene of “hierarchy” is addressed, since the group decision (building block “how”) is made by people in authority (building block “who”). The employees from the university participated in the decision making because they are paid by the university, in the first place; however, by talking to the jury participants, we found that the employees – as well as the entrepreneurs from outside the university – were engaged in this task also because they we curious about, and interested in, the ideas that might emerge out of the competition (love).

The first prize was awarded to a team of students who had developed a self-sustaining, energy efficient and scalable desalination facility. The second prize went to three students who developed a mobile application for diabetics. The underlying idea of this concept was that the application supports the user (diabetic) concerning food intake as well as regarding the interaction of a diabetic patient with the diabetic clinic. We outline this business idea because parts of this concept refer to the open innovation approach: By using the proposed application, diabetic patients have the opportunity to submit ideas regarding the enhancement of services offered by the clinic. The third prize was awarded to a student from the faculty of computer science who developed a software application enabling musicians to play together synchronously via the Internet.

Idea award ceremony: The award ceremony was held on October 2011, two months after the submission deadline. Beforehand, all university staff and students, as well as representatives of companies that cooperate with the university were invited via e-mail to join the closing event of the business plan ideas competition, with 150 people from public and private sectors attending this event. Here, the three winning ideas were awarded, after which the teams presented their innovation ideas to the audience. Afterwards, the team members had an opportunity to discuss the further development of their ideas with interested entrepreneurs.

We now summarize the characteristics of the "UniKat Business Plan Ideas Competition" using the outline presented in section 3.1 (see Table 4).

Insert Table 4 about here

4.2 Case Discussion

The case of the "UniKat Business Plan Ideas Competition" can help in exploring the assumed potential of ideas competitions to foster the inside-out process of universities. In the following, we analyze selected phenomena that we experienced within the frame of the implementation of the business plan ideas competition with respect to the areas of interest.

Since the administration of the university – as the organizer of the ideas competition – intended to generate ideas and solutions that might eventually emerge as spin-offs from universities, it was apposite to label the contest as a "business plan ideas competition" to motivate the students to develop marketable conceptions. In so doing, comprehensive business plans, partly including concrete market feasibility analyses, were developed by the students instead of just immature (business) ideas. These kinds of concepts would have a greater chance of attracting the interest of potential investors, hence increasing the chance of business formation. The provision of consulting hours was also conductive to the development of well-engineered business plans, since the participants used that service to attain information concerning their ideas.

Moreover, by providing an Internet platform for the ideas competition, the students had the possibility to continuously keep in contact with consultants as well as with other participants. The forums on the platform were predominantly used to discuss the eligibility requirements' general conditions of the competition with the administrators and other members. The website was also useful for increasing the awareness of the competition and thus extending the range of the competition. This aspect was crucial since the faculties of the considered university were not within one campus but distributed all over the region.

By specially implementing a website for the ideas competition, it was intended to bring together students from various faculties and disciplines; however, we observed that the participating teams were very homogeneous. This could have been due to the fact that

intensive consulting and mentoring was provided. Hence, for instance, agriculture science students did not need to involve students from economics in order to develop a proper business plan.

We observed that the entrepreneurs that attended the award ceremony showed a high level of interest in the presented ideas. This may be not only because the students had developed accurate business plans, but may also be due to the fact that a group of business practitioners were part of the jury. Given their extensive experience, business practitioners usually have a more distinctive sense of recognizing promising ideas. Hence, including practitioners in the jury is an expedient approach to identifying marketable ideas for potential spin-offs.

5. DISCUSSION AND IMPLICATIONS

The analysis of the case study shows justification for the potential of ideas competitions for fostering the inside-out activities of universities. The case of business plan competitions, in particular, indicates the benefits that universities could expect for the realization of emerging businesses from universities.

Hence, a practical implication of this research is an invitation for universities to call on intra-university ideas competitions in order to promote their inside-out activities. This paper contributes various potentials that an implementation of ideas competitions implies. In order to utilize the noted benefits, practitioners are advised to adjust a planned ideas competition on predefined goals. For instance, if the intention lies in fostering inside-out activities, conducting a business plan competition is most advisable. Practitioners should also pay attention to the support provided for the competition as well as to incentives. Providing the students with consultation and mentoring services during the competition enhances the quality

of the submitted ideas. Thereby, students' competencies are also strengthened, since they learn how to evolve simple ideas into marketable solutions.

Further, an Internet platform where students are able to obtain information regarding the contest and connect with other participants has a supporting effect for the students. By implementing such a platform, the competition becomes more transparent and for all students information is available around the clock. This, in turn, might raise the willingness to participate in an ideas competition.

However, despite their inherent potential, the implementation of such intra-university ideas competitions has to be considered in the light of an 'input-output-ratio' regarding the required workload: Through the ideas competition we were able to generated 15 valuable business concepts, with three of them (the three winning business plan ideas) now being further developed with existing firms and entrepreneurs. On the other side, five people were continuously engaged over two months to implement the ideas competition within the university, i.e., plan the approach, set up the online community for the competition, communicate the ideas competition, contact all stakeholders, etc. Further, practitioners would have to consider the 'rigidity of the structures' of the located university: In some university facilities an implementation such intra-university competitions might face resistance. These are crucial since according to our findings we would suggest that intra-university ideas competitions are especially fruitful if they are conducted across several different domains (i.e., faculties).

The theoretical contribution of this paper lies in the application of the conception proposed by Malone et al. (2010), which is assigned to serve as a framework for designing crowdsourcing systems. However, hitherto its implementation has not been realized. We found that an alignment on Malone et al.'s framework paves the way for a systematic approach regarding

the implementation of intra-university ideas competitions. Although the framework is very generic, it provided us the opportunity to address the central dimension of a crowdsourcing concept such as ideas competitions. Based on that, we were able to accurately plan the crowdsourcing parts of the business plan ideas competition (phase of idea generation and evaluation; see Figure 4) and derive precise measures. To determine and coordinate appropriate steps, we draw on Ebner et al.'s (2008) proposed approach. For our case, we can confirm that Malone et al.'s framework as well as Ebner et al.'s approach provided apposite concepts to implement an ideas competition within a university setting. Figure 4 summarized our approach in the context of the presented case.

Insert Figure 4 about here

---

6. CONCLUSION AND FURTHER RESEARCH IMPLICATIONS

Ideas competitions have gained much attention in academic research over the last years. However, further research is still needed to better understand this valuable method (Haller et al., 2011). Due to the fact that hitherto sparse research has been conducted regarding the usage of open innovation methods within public organizations such as universities, this paper intended to present an approach to the implementation of ideas competitions within in such a setting.

We first provide a theoretical background by briefly approaching the open innovation approach as well as presenting ideas competitions before we present related work in order to utilize previously generated insights for the subsequent development of our framework. By adopting the theoretical account proposed by Malone et al. (2010) as well as related work on

ideas competitions, we comprised the various dimensions regarding the implementation of ideas competitions on university level. We then introduce the case of the UniKat Business Plan Competition which we conducted at a university in Germany. The analysis of the case shows that intra-university ideas competitions allow universities to stimulate the creativity of their students by means of encouraging them to develop innovative and marketable solutions in the frame of a business plan competition. Thereby, universities' inside-out process is enhanced as well, since submitted solutions might eventually emerge as spin-offs from universities. Further, we found that Malone et al.'s (2010) framework and Ebner et al.'s (2008) approach provide apposite concepts to implement an ideas competition within a university setting.

The cases the "UniKat Business Plan Competition" shows many of the previously assumed potentials of ideas competition on university level. Nevertheless, the case study depicts also some implications for further research. First, further research would be particularly useful in the identification of measures that foster the participation of the students. In our case, 28 students generated 15 valuable submissions. However, tis participation rate is relatively low. Hence, upcoming studies should possibly focus on incentives that are appropriate to motivate students for participation.

Second, further research should focus on students' usage of ideas supporting Internet platforms like the UniKat website. The 69 registered members of the UniKat website initiated discussions with the organizing board in the forums; however, the interactions between the students were not as significant. Further, we observed that the participating teams of the competition were highly homogeneous. Hence, upcoming studies might, on the one hand, focus on measures that incite students to become more active in such Internet platforms. On the other hand, measures that encourage the interaction and connection between students are to be analyzed.

Third, further academic studies might focus on the phase of evaluation within ideas competitions. In the presented case, the most promising business plan ideas were determined by a jury consisting of experts (university staff and practitioners/entrepreneurs; hierarchy). However, the issue whether the crowd (i.e., students) would have decided differently or not possibly depicts a research question that should be addressed in the frame of academic studies from the research field of crowdsourcing.

In summary, ideas competitions within public organizations represent a vast field of research, where more insights need to be generated by upcoming studies. Case studies, such as the underlying study, are a first step in that direction.

Figure 1

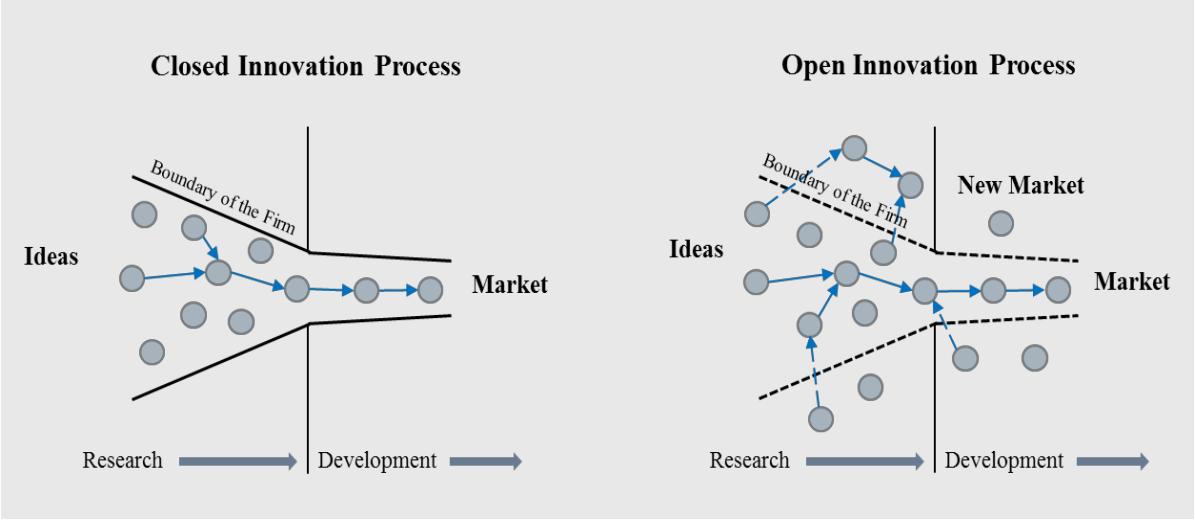

Figure 1: Open and Closed Innovation Process

Source: Adapted from Chesbrough (2003)

Figure 2

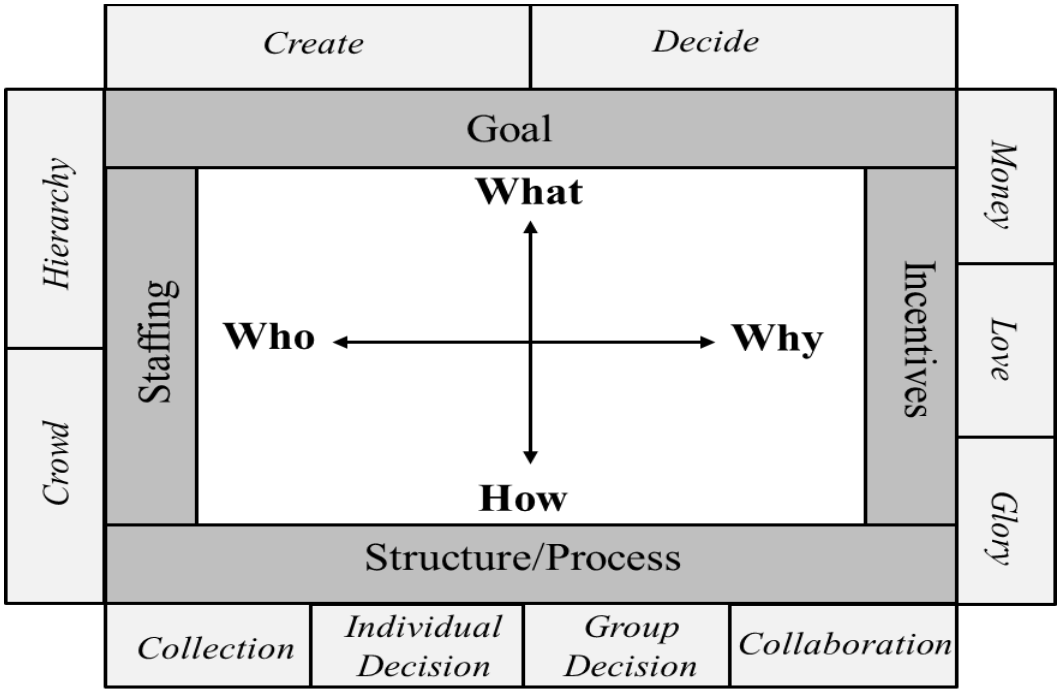

Figure 2: Elements of Collective Intelligence Building Blocks

Source: Adapted from Malone et al. (2010)

Figure 3

Figure 3: Website of the UniKat Business Plan Ideas Competition

Figure 4

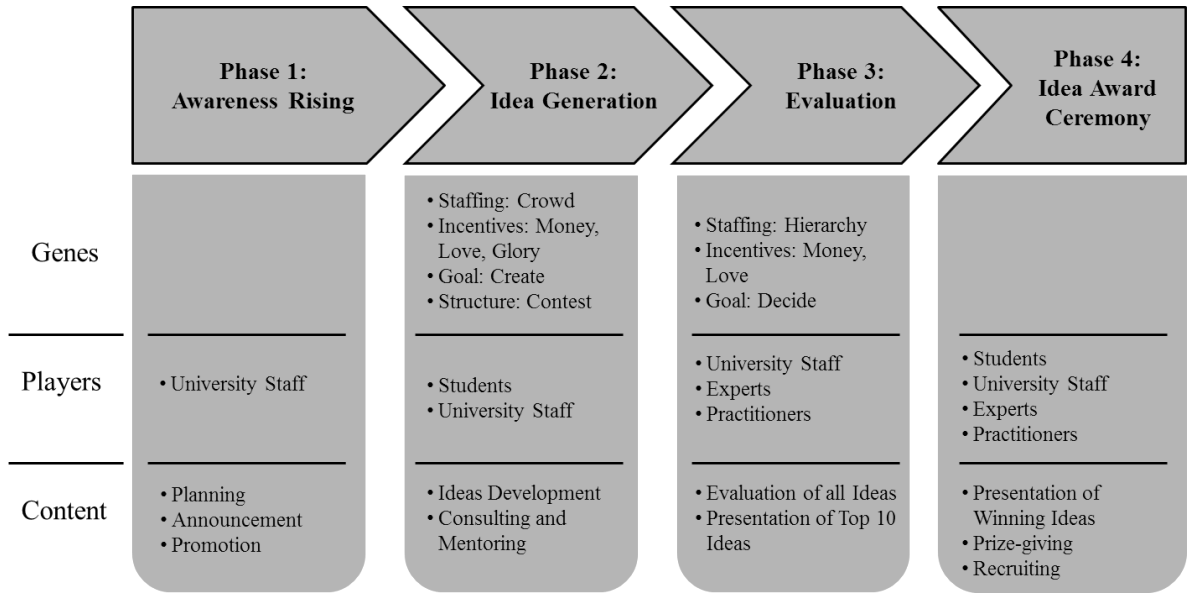

Figure 4: Process of UniKat Businness Plan Ideas Competition

Table 1

Swarovski, Swarovski Design Contest URL: http://www.swarovski.at		
Content & Task:	Participants had to submit ideas in the form of concrete jewelry design concepts. On the Internet platform of this idea competition a special toolkit was provided, which enabled them to make appropriate design drafts.	Füller et al. (2003)
Duration:	4 Weeks	
Participants:	Over 300	
Submitted ideas:	206	
Adidas, miadidas URL: http://www.miadidas.com		
Content & Task:	Customers were invited to submit ideas on the design or functionality of sport shoes.	Piller&Walcher (2006)
Duration:	Several weeks	
Participants:	57	
Submitted ideas:	82	
Fujitsu Siemens, IT Services for Contest Tomorrow's Data Center URL: http://innovation-contest.fujitsu-siemens.com		
Content & Task:	The contest was dedicated to "IT Services for Contest Tomorrow's Data Center" and addressed issues Fujitsu Siemens products. It was important to anticipate how data centers will function and to find out what services will be required in the years ahead.	Reichwald and Piller (2009)
Duration:	6 weeks	
Participants:	370	
Submitted ideas:	160	
IBM: Global Innovation Jam URL: www.globalinnovationjam.com		
Content & Task	Innovation Jam was not just a large online brainstorm. The Jam's goal was to move beyond simple invention and idea generation. IBM wanted to identify new market opportunities and create real solutions that advance business, communities, and society in meaningful ways.	Bjelland and Wood (2008)
Duration	6 days	
Participants	150.000 employees	
Submitted ideas:	46.000	

Cisco Systems, "I-Prize" URL: http://www.led-emotionalize.com/		
Content & Task:	The goal was to find an idea that would spawn a new billion-dollar Cisco business. As basic criteria, the idea had to fit into the company's strategy and take advantage of the leadership position in internet technology.	Jouret (2009)
Duration:	9 weeks	
Participants:	2500	
Submitted Ideas:	1200	

Table 1: Prominent Examples of Ideas Competitions

Table 2

Criteria	Description	Attributes			
Organizer	Entity initiating ideas competition	Company	Public organization	Non-profit	Individual
Media	Environment of ideas competition	Online	Mixed	Offline	
Community functionality	Provision of an Internet platform for interaction with other participants	Given	Not given		
Task specificity	The scope of the problem specification	Low (open task)	Defined	High (specified task)	
Degree of elaboration	The required level of quality and complexity for participants' ideas	Idea	Sketch	Concept	Prototype	Solution
Target group	Participants of an idea contest	Specified	Unspecified		
Participation	Number of persons forming one entity of participant	Individual	Team	Both	
Timeline	The runtime of submission phase	Very short term	Short term	Long term	
Incentives	Types of prizes offered to encourage motivation	Monetary	Non-monetary	Mixed	
Evaluation	Determination of ranking of idea submissions	Jury evaluation	Peer review	Mixed	

Table 2: Key Characteristics of Ideas Competitions

Source: Adapted from Bullinger and Möslein (2010)

Table 3

	What		Who	Why	How
Intra-University Ideas Competitions	Create	Ideas/ Concepts/ Solutions	(Teams of) Students	Love Money Glory	Contest
	Decide	Select Winning Concept	Hierarchy	Love Money	Hierarchy: Group Decision

Table 2: Mapping the Collective Intelligence Genome for Intra-University Ideas Competitions

Table 4

Criteria	**Attributes**
Organizer	*Public organization:* University
Media	*Mixed:* Contributions via offline-mail or by using the provided website
Community functionality	*Given:* The UniKat website
Task specificity	*Defined:* Development of a business plan
Degree of elaboration	*Sketch and/or Concept:* Students were asked to at least submit a rudimentary business plan; however, further development and a concepts were welcome
Target group	*Specified:* Students
Participation	*Both options* (teamwork, or individual work) available
Timeline	*Long term:* Summer term – Four months
Incentives	*Mixed:* Monetary (cash prizes: 1,500 € fo the first place; 1,000 € for the second place; and 500 € for the third place) and non-monetary (consulting and mentoring services regarding business formation) incentives
Evaluation	*Jury evaluation*: Jury consisted of experts within the university (teaching staff) as well as practitioners (entrepreneurs)

Table 4: Characteristics of the UniKat Business Plan Ideas Competitions

References:

Adamczyk, S., Bullinger, A. C., & Möslein, K. M. 2011. Innovation Contests: A Review, Critique and Future Research Directions, ***11th European Academy of Management Conference (EURAM)***. Tallin, Estonia.

Bittner, E., & Leimeister, J. M. 2011. ***Towards CSR 2.0 - Potentials and Challenges of Web 2.0 for Corporate Social Responsibility Communication***. Paper presented at the Proceedings of the 11th Academy of Management Annual Meeting, Tallinn, Estonia.

Bjelland, O. M., & Wood, R. C. 2008. An Inside View of IBMs Innovation Jam. ***MIT Sloan Management Review***, 50(1): 31-40.

Blohm, I., Riedl, C., Leimeister, J. M., & Krcmar, H. 2011. Idea Evaluation Mechanisms for Collective Intelligence in Open Innovation Communities: Do Traders outperform Raters?, ***Thirty Second International Conference on Information Systems*** 1-24. Shanghai 2011.

Bogers, M., Afuah, A., & Bastian, B. 2010. Users as Innovators: A Review, Critique, and Future Research Directions. ***Journal of Management***, 36(4): 857-875.

Bretschneider, U., Huber, M., Leimeister, J. M., & Krcmar, H. 2008. ***Community for Innovations: Developing an Integrated Concept for Open Innovation***. Paper presented at the International Federation for Information Processing (IFIP) 2008, Madrid, Spain.

Bullinger, A. C., & Möslein, K. M. 2010. ***Innovation contests – where are we?*** . Paper presented at the Proceedings of the 16th Americas Conference on Information Systems.

Bullinger, A. C., Neyer, A. K., Rass, M., & Möslein, K. M. 2010. Community-based innovation contests: where competition meets cooperation. ***Creativity and Innovation Management***, 19(3): 290–303.

Carvalho, A. 2009. In search of excellence - Innovation contests to foster innovation and entrepreneurship in Portugal. ***CEFAGE-UE Working Paper***.

Chesbrough, H. 2003. The era of open innovation. ***Sloan Management Review***, 44(4).

Chesbrough, H. W. 2006. ***Open Innovation. The New Imperative for Creating and Profiting from Technology*** (1 ed.). Boston, MA.

Darke, P., Shanks, G., & Broadbent, M. 1998. Successfully completing case study research: combining rigour, relevance and pragmatism. ***Information Systems Journal***, 8(4): 273-289.

Duverger, P., & Hassan, S. 2007. ***An Empirical Study to Identify New Sources of Radical Service Innovation Ideas Using the Toolkit for Idea Competition***. Paper presented at the Proceedings of MCPC 2007, The World Conference on Mass Customization and Personalization, Boston: MIT.

Ebner, W., Leimeister, J. M., Bretschneider, U., & Krcmar, H. 2008. Leveraging the Wisdom of Crowds: Designing an IT-supported Ideas Competition for an ERP Software Company, ***41st Hawai'i International Conference on System Sciences (HICSS 41)***. Big Island, Hawai'i.

Ebner, W., Leimeister, J. M., & Krcmar, H. 2009. Community engineering for innovations: the ideas competition as a method to nurture a virtual community for innovations. ***R & D Management***, 39(4): 342-356.

Eisenhardt, K. M. 1989. Building Theories from Case Study Research. ***The Academy of Management Review***, 14(4): 532-550.

Erickson, T. 2011. Some Thoughts on a Framework for Crowdsourcing, ***Position Paper for the CHI 2011 Workshop on Crowdsourcing and Human Computation***.

Füller, J., Hutter, K., & Faullant, R. 2011. Why co-creation experience matters? Creative experience and its impact on the quantity and quality of creative contributions. ***R&D Management***, 41(3): 259-273.

Füller, J., & Matzler, K. 2007. Virtual product experience and customer participation - A chance for customer-centred, really new products. ***Technovation***, 27(6-7): 378-387.

Füller, J., Mühlbacher, H., & Riedler, B. 2003. An die Arbeit, lieber Kunde: Kunden als Entwickler. ***Harvard Business Review***, 25(5): 34-54.

Gassmann, O., & Enkel, E. 2004. Towards a Theory of Open Innovation: Three Core Process Archetypes, ***R&D Management Conference (RADMA)***. Lissabon, Portugal.

Gianiodis, P. T., Ellis, S. C., & Secchi, E. 2010. Advancing a Typology of Open Innovation. ***International Journal of Innovation Management***, 14(4): 531-572.

Greengard, S. 2011. Following the crowd. ***Communications of the ACM***, 54(2): 20-22.

Haller, J. B. A., Bullinger, A. C., & Möslein, K. M. 2011. Innovation Contests: An IT-Based Tool for Innovation Management. ***Business & Information Systems Engineering***, 2: 103-106.

Hallerstede, S., & Bullinger, A. C. 2010. ***Do you know where you go? A taxonomy of online innovation contests*** Paper presented at the Proceedings of the XXI ISPIM Conference.

Hansen, E. G., Bullinger, A. C., & Reichwald, R. 2011. ***Innovation Contests for Sustainability-Oriented Product Innovation - Findings from a Worldwide Shoe Innovation Contest***. Lüneburg: Centre for Sustainability Management.

Hars, A., & Ou, S. 2002. Working for free? Motivations for participating in open-source projects. ***International Journal of Electronic Commerce***, 6(3): 25-39.

Helms, R., Giovacchini, E., Teigland, R., & Kohler, T. 2010. A Design Research Approach to Developing User Innovation Workshops in Second Life. ***Journal of Virtual Worlds Research***, 3(1).

Hertel, G., Niedner, S., & Herrmann, S. 2003. Motivation of software developers in open source projects: An internet-based survey of contributors to the Linux kernel. ***Research Policy***, 32(1): 1159-1177.

Hevner, A. R., March, S. T., Park, J., & Ram, S. 2004. Design science in Information Systems research. ***Mis Quarterly***, 28(1): 75-105.

Huber, M. J., Bretschneider, U., Leimeister, J. M., & Krcmar, H. 2009. ***Making Innovation Happen: Tool-Support for Software Related Communities for Innovations***. Paper presented at the International Reports on Socio-Informatics - Open Design Spaces Supporting User Innovation. Proceedings of the International Workshop on Open Design Spaces (ODS'09), Bonn, Germany.

Huizingh, E. K. 2011. Open innovation:State of the art and future perspectives. ***Technovation***, 31(2): 2-9.

Hutter, K., Hautz, J., Füller, J., Mueller, J., & Matzler, K. 2011. Communitition: The Tension between Competition and Collaboration in Community-Based Design Contests. ***Creativity and Innovation Management***, 20(1): 3-21.

Järvilehto, M., Similäy, J., & Liukkunen, K. 2010. Active Innovation - Case Study in Smart Exercise Environments: Comparing Traditional and Experimental Innovation Methods. ***International Journal of Innovation Management***, 14(3): 449–470.

Jouret, G. 2009. Inside Cisco's Search for the Next Big Idea. ***Harvard Business Review, September 2009***.

Kates, A., & Galbraith, J. R. 2007. ***Designing Your Organization***. San Francisco: Jossey-Bass.

Klein, D., & Lechner, U. 2009. The Ideas Competition as Tool of Change Management – Participatory Behaviour and Cultural Perception ***XX ISPIM Conference***. Vienna.

Kristensson, P., Magnusson, P. R., & Matthing, J. 2002. Users as a Hidden Resource for Creativity: Findings from an Experimental Study on User Involvement. ***Creativity and Innovation Management***, 11(1): 55-61.

Lakhani, K. R., & Wolf, B. 2005. Why Hackers Do What They Do. Understanding Motivation and Effort in Free/Open Source Software Projects. In J. Feller, B. Fitzgerald, S. Hissam, & K. R. Lakhani (Eds.), ***Perspectives on Free and Open Source Software***. Cambridge, MA: The MIT Press.

Lee, S., Park, G., Yoon, B., & Park, J. 2010. Open innovation in SMEs - An intermediated network model. ***Research Policy***, 39: 290-300.

Leimeister, J. M., Huber, M., Bretschneider, U., & Krcmar, H. 2009. Leveraging Crowdsourcing: Activation-Supporting Components for IT-Based Ideas Competition. ***Journal of Management Information Systems***, 26(1): 197–224.

Libert, B., & Spector, J. 2007. ***We Are Smarter Than Me: How to Unleash the Power of Crowds in Your Business***. Upper Saddle River, NJ: Prentice Hall.

Lichtenthaler, U. 2011. Open Innovation: Past Research, Current Debates, and Future Directions. ***The Academy of Management Perspektives***, 25(1).

Lilien, G. L., Morrison, P. D., Searls, K., Sonnack, M., & Von Hippel, E. 2002. Performance Assessment of the Lead User Idea-Generation Process for New Product Development. ***Management Science***, 48(8): 1042-1059.

Malone, T. W., Laubacher, R., & Dellarocas, C. 2010. The Collective Intelligence Genome. ***MIT Sloan Management Review***, 51(3): 20-31.

McClain, A. S., Oliver, T. G., McClain, S. T., Stephens, B. J., Dwyer, Z. B., & Rigney, D. 2005. ***Hovercraft design experiences in a freshman engineering course at UAB***. Paper presented at the Proceedings of ASEE Southeastern Section Annual Conference.

Möslein, K. M., Haller, J. B. A., & Bullinger, A. C. 2010. Open Evaluation: Ein IT-basierter Ansatz für die Bewertung innovativer Konzepte. ***HMD Sonderheft: IT-basiertes Innovationsmanagement***, 273: 21-34.

Murphy, R. R. 2000. Using robot competitions to promote intellectual development. ***AI Magazine***, 21(1): 77-90.

Pack, D. J., Avanzato, R., Ahlgren, D. J., & Verner, I. M. 2004. Fire-fighting mobile robotics and interdisciplinary design-comparative perspectives. ***IEEE Transactions on Education***, 47(3): 369-376.

Piller, F. T., & Walcher, D. 2006. Toolkits for idea competitions: a novel method to integrate users in new product development. ***R&D Management***, 36(3): 307-318.

Randolph, G. B., & Owen, D. O. 2008. Attracting communities and students to IT with a community service web contest, ***SIGITE Conference***. Cincinnati.

Reichwald, R., & Piller, F. 2009. ***Interaktive Wertschöpfung: Open Innovation, Individualisierung und neue Formen der Arbeitsteilung*** (2 ed.). Wiesbaden.

Surowiecki, J. 2005. ***The Wisdom of Crowds***. New York: Anchor Books.

Terwiesch, C., & Xu, Y. 2008. Innovation Contests, Open Innovation, and Multiagent Problem Solving. ***Management Science***, 54(9): 1529–1543.

Walcher, P. D. 2007. ***Der Ideenwettbewerb als Methode der aktiven Kundenintegration [The Ideas Competition as an Approach for Active Customer Integration]***. Wiesbaden: Deutscher Universitäts-Verlag.

West, J., & Lakhani, K. 2008. Getting Clear About Communities in Open Innovation. ***Industry innovation***, 15(2): 223-231.

Witt, M., Scheiner, C., & Robra-Bissantz, S. 2011. Gamification of Online Idea Competitions: Insights from an Explorative Case. In H.-U. Heiß, P. Pepper, B.-H. Schlingloff, & J. Schneider (Eds.), ***Informatik schafft Communities; Lecture Notes***

in Informatics (LNI) - Proceedings, Series of the Gesellschaft fuer Informatik 2011. Bonn.

Zwass, V. 2010. Co-Creation: Toward a Taxonomy and an Integrated Research Perspective. ***International Journal of Electronic Commerce***, 15(1): 11-48.