External Knowledge In Organisational Innovation - Toward An Integration Concept

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EXTERNAL KNOWLEDGE IN ORGANISATIONAL INNOVATION – TOWARD AN INTEGRATION CONCEPT

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Abstract

The integration of customer knowledge into innovation processes not only faces companies with many challenges but also opens up opportunities for new product development and fostering innovativeness. Past research describes a multitude of approaches and practical examples, which companies can refer to if they are willing to tap customer knowledge. With the emergence of social software and open innovation there are even more potential paths to follow. In this regard, this research aims to propose a concept that categorises such strategies. Based on a structured literature review in the domain of open innovation the author analysed the body of related literature and best practices in order allocate the identified options within the process of innovation. Thus, the study emphasises strategic perspectives that distinguish between objective-centred, marketing-focused and hybrid approaches.

The results can be utilised as guidance for knowledge integration and help companies to navigate through the selection process of strategies for customer knowledge integration in organisational innovation processes.

Keywords: open innovation, knowledge management, customer knowledge, product innovation, customer integration.
1 Introduction

There is a widespread understanding among researchers and practitioners that the increasing importance of innovation to economies and companies presents a great dynamic. Companies must innovate to manage fluctuating customer demands. Without innovation they would not be able to capitalise on opportunities that new technologies, markets and structures offer and, thus, could not sustain their competitiveness (Kruse, 2012). The success of such endeavours depends on the firm’s effectiveness in generating, developing, and implementing innovation (Fichter, 2009).

As highlighted in several studies, companies are increasingly drawing in external knowledge (EK) to foster their innovation process. They not only focus on ideas generated by external stakeholders, they even invite them to participate along the whole process of innovation (Du Plessis, 2007; Enkel, Kausch, & Gassmann, 2005). From a knowledge-based perspective this observation leads to the conclusion that EK (e.g., from customers, competitors, suppliers, research institutions, etc.) can be regarded as central the benefactor for innovativeness (Xu, Houssin, Caillaud, & Gardoni, 2010).

Due to the fact that EK exists in numerous forms and is held by a wide range of knowledge bearers (Kang & Kang, 2009) companies must focus on the most valuable knowledge or base its acquisition, e.g., on strict financial considerations. This led to an increasing importance of a purposeful knowledge management. Nevertheless, even if a company is able to identify the most valuable knowledge, there are numerous approaches to integrate/acquire such knowledge. Plus, each procedure has its own perils and virtues depending on the type of knowledge, company, branch, product, etc.

To provide a first glimpse on the complexity of the above-mentioned situation this study investigates approaches suggested by Open Innovation (OI) researchers and practitioners. The author focuses on customer knowledge (CK) as one of the most important sources of ideas, experiences with products, etc. in the context of OI (Kruse & Geißler, 2012). Following Gebert, Geib, Kolbe, and Brenner (2003, p. 109) CK can be classified into three categories: In addition to knowledge for and knowledge about customers there is knowledge from customers. While the first type comprises knowledge, which is required to satisfy customer needs and which is allocated in products, services, markets, etc., the second type accumulates knowledge, which helps companies to understand their customers, beliefs, needs, etc. Beside these two highly valuable types of CK the focus of this research lies on type number three: knowledge from customers. Such knowledge derives from customers’ experiences with products, services, markets, etc. and can be used for innovation purposes. A comprehensive overview on potential knowledge assets associated with this type can be found in Kruse and Geißler (2012).

With the emergence of Web 2.0 technologies the amount of CK as well as its accessibility has grown significantly (Belkahla & Triki, 2011). Furthermore, the Internet and its various platforms, channels, etc. encourage discussions on existing products or ideas for future ones. An organisation, that manages to identify and fulfil such demands and ideas, may gain a competitive advantage.

Even though the importance of such knowledge is indisputable, companies cannot refer to a general approach that allows them to foster innovativeness through EK, i.e. CK. Following the paradigm shift towards OI (Chesbrough, 2003) many companies already succeed in tapping CK. However, OI with its multitude of strategies lacks an ideal approach as well. In this regard, the author suggests a systematisation based on the analysis of existing OI projects or platforms while emphasizing the benefits of the application of Web 2.0 technologies (i.e., social software). It shall provide a frame for the CK integration approaches and illustrate how they can be allocated within the stages of the process of innovation.

The suggested concept will help companies to map the most suitable OI approach on their innovation demands and may allow them to gain more than just brand awareness by inviting customers.

To reach the research aim the following questions will be answered:
• How do companies currently integrate customer knowledge through OI projects?
• How can Social Software tools improve current integration concepts or strategies?
• How can best practices for integration concepts and strategies be systematised?
To set up the necessary foundations the following section summarises the body of related literature on innovation, esp. innovation processes. After that, section 3 sheds light on the methodological approach of the study. Subsequently – keeping in mind the wide range of types of EK and its bearers –, the author conducts an analysis of existing OI projects and best practices, which aim at integrating CK (section 4). Answering question 1 should provide a comprehensive overview on existing strategic approaches to customer knowledge integration (section 4.1). Following the description of examples (section 4.2), the answer to question 2 will clarify how Social Software tools (section 5) may support the strategies. Finally, solving question number 3, the author develops a systematisation, which helps to summarise and differentiate the identified CK integration approaches (section 6).

2 Extant studies on innovation process

It is commonly known that organisations need to innovate in order to be able to respond to changing customer demands as well as to capitalise on opportunities offered by new technology and changes in markets (Rowley, Baregheh, & Sambrook, 2011). Innovation plays a central role in value creation and to sustain competitive advantage.

Although this idea is not new – neither in practice nor research – innovation and the process of innovation lack a general definition. Many authors highlight several perspectives, which relate to innovation as a process, as an item (e.g., product, service or program) or innovation as an attribute of organisations. From an output-oriented point of view innovation can simply be defined as “the generation, acceptance and implementation of new ideas, processes products or services” (Thompson, 1965). From a more business-related perspective innovation comprises “the creation of new knowledge and ideas to facilitate new business outcomes, aimed at improving internal business processes and structures and to create market driven products and services” (Du Plessis, 2007, p. 21). Although the author does not waive the possibility that the concept can be applied on services as well, the present research is primarily limited to product innovation.

Throughout literature the process of innovation encompasses different numbers and definitions of stages that business organisations pursue to innovate. Godin (2006), e.g., refers to a linear model of innovation as a one-way flow from fundamental over applied research to product development that comprises invention, innovation, and diffusion. In a similar way Ruttan (1959) differentiates between invention, innovation and technological change. Although these models have been very influential, widely disseminated decades ago, today’s understanding provides a more complex view on the process of innovation and tends to add several intermediate steps. Utterback (1974), e.g., widens the conception of the three stages and divides the process into “generation of an idea, problem-solving or development, and implementation and diffusion” (Utterback, 1974, p. 621). Generation involves a synthesis of diverse information, e.g., about a market or needs and technologies to meet the needs and results in a proposal. Problem solving is concerned with “setting specific technical goals and designing alternative solutions to meet them” and leads to an original solution or invention. After that implementation, i.e. “manufacturing-engineering, tooling, and plant and market start-up required to bring an original solution or invention to its first use or market introduction” is followed by diffusion, which “takes place in the environment and begins after the innovation is introduced” (Utterback, 1974, p. 621).

Due to fluctuating customer needs, increasing technological changes and soaring competition, innovation is extremely dependent on the availability of internal and external knowledge (Du Plessis, 2007). Hence, current definitions of the process of innovation strongly emphasise the knowledge perspective, e.g., with “knowledge creation” (Miles, Snow, & Miles, 2000) or “knowledge commercialization” (Desouza et al., 2009).

In order to keep the focus on knowledge the present study draws upon an innovation process that was developed to highlight the increasing importance of the knowledge perspective. Figure 1 illustrates a simple process model derived from Xu et al. (2010, p. 580), which concentrates on four stages.

Idea generation and research/development can be compared to what (Utterback, 1974, p. 621) described with the first and second phase of his innovation process. These stages result in elaborated ide-
as/sketches or further concepts (Bullinger, Neyer, Rass, & Moeslein, 2010). The following ones (prototyping/manufacturing and marketing/sales diffusion) separate the stage of implementation and diffusion as suggested by Utterback (1974) and thereby differentiate between early development, e.g., of a new product and its final commercialisation. Hence, the degree of elaboration ranges from early prototypes to final solutions (Bullinger et al., 2010).

Figure 1. Process of innovation (cf. Xu et al., 2010, p. 581)

Most recent research on innovation and, moreover, developments in practice led to a new understanding that resulted in a paradigm shift towards the concept of OI (Chesbrough, 2003). As mentioned earlier, this idea also focuses on tapping knowledge of the customers. In addition to that, the integration of social media, whose principles OI adopts, may facilitate knowledge transfer and, thus, innovation.

Studies already revealed that involving external stakeholders into organisational innovation processes positively influences the success of new product development (NPD) (Kirchmann & Warschburger, 2003). The most common sources of EK include, e.g., academic institution, companies within and outside the value chain, competitors and customers. Despite the rich discussion about the perils and virtues of EK integration current research is restricted to proving general applicability and usefulness, but lacks an integration concept that describes possible approaches from start to end of the process of innovation. Xu et al. (2010) already try to integrate models of innovation and knowledge transfer but rather focus on the knowledge perspective and remain on an abstract level.

3 Methodology

Because of the relative novelty of the topic of OI (section 1 & 2) the author focused on qualitative data to aid theory building (Ebner, Leimeister, & Krcmar, 2009; Glaser & Strauss, 1967). First, to improve the theoretical understanding of approaches to tapping customer knowledge through OI a systematic literature review (SLR) was conducted. The methodology provides a repeatable and structured procedure to identify, evaluate, and interpret existing literature (Webster & Watson, 2002). Second, in order to map the findings from literature with current OI projects, company websites, project reports, and intermediates’ websites were analysed for substantial contributions to answering the above-mentioned research questions (section 1). Hence, in order to offer a first glimpse on the data taken into account a mixture of literature review and online data analysis was conducted. Thereby, the present study covers the principles of data collection as suggested by Yin (2003): multiple sources of evidence, a case study database, and a chain of evidence.

The planning stage of the data collection included several steps. First, the research interest of the paper was stated in the form of three research questions (section 1). Second, an appropriate search strategy was derived. The search strategy comprises the identification of the population, the selection of suitable resources, the definition of search strings, and the determination of inclusion and exclusion criteria (Webster & Watson, 2002, p. xv).

During SLR the search for respective scientific papers was limited to research published between the year 2003, when the term OI was first coined by Henry Chesbrough, and 2012. Books, newspapers, or other unpublished articles were not considered, because the aim of this search was not to cover every single publication, but prominent as well as most recent ones. Therefore, the databases used were restricted to those supplying scientific journals and conference proceedings. In addition to that, only full papers accessible in English language could be included.

In reference to the search strategy ACM Digital Library, Emerald Group, ScienceDirect, and Wiley Online Library were used as databases to start with. The search terms were derived from the RQs (section 1). Following Glaser and Strauss (1967) the author began with a broad research aim to collect as much data as possible. Thus, starting with the main term open innovation, the first search query result-
ed in 2389 publications. To limit the findings to papers, which refer to practical examples in their studies best practice related terms, such as case or project were used as additional keywords. Table 1 illustrates exemplary findings from the conducted search queries.

<table>
<thead>
<tr>
<th>Database</th>
<th>String</th>
<th>&quot;open innovation&quot;</th>
<th>&quot;open innovation&quot; AND &quot;best practice&quot;</th>
<th>&quot;open innovation&quot; AND title:case</th>
<th>&quot;open innovation project&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACM Digital Library</td>
<td>212</td>
<td>7</td>
<td>0</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Emerald Group</td>
<td>476</td>
<td>59</td>
<td>0</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ScienceDirect</td>
<td>941</td>
<td>6</td>
<td>52</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Wiley Online Library</td>
<td>757</td>
<td>154</td>
<td>18</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Sum</td>
<td>2386</td>
<td>226</td>
<td>70</td>
<td>31</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Results from search various search queries
After scanning through the abstracts to eliminate irrelevant publications (e.g., those which include the search terms but do not offer examples) and duplicates the number of papers could be reduced to 52. This sample only comprises papers from the management and related disciplines, have a strong OI focus, and thus do not represent the whole body of literature.

Following the second step of data collection the findings from literature were triangulated with publicly available information, which could be identified following the case descriptions in literature and through observation by the author (e.g., company web-sites, project reports, and intermediates’ web-sites). In theory, the collection of data can be stopped once a point, at which learning becomes minimal, is reached (Glaser & Strauss, 1967). In this case, theoretical saturation was reached when additional studies or best practices could not add to what was already known.

4 Analysis

With their knowledge in the form of experiences, improvement ideas, etc. customers possess one prerequisite to innovative products that meet their demands. Hence, companies should try to actively involve them into their innovation processes. The aim of such efforts is, e.g., to generate new ideas, support innovation development, tap external expertise, generate new innovations, and renew competencies (Dahlander & Wallin, 2006; Di Gangi & Wasko, 2009). In this concern the integration of customer knowledge is regarded as a mode of value creation (Reichwald & Piller, 2006) in which customers take part in “operational as well as innovation value-creating activities” (Ebner et al., 2009).

4.1 Basic strategies

Across the process of innovation (Figure 1) the degree of customer involvement and amount of customer knowledge varies. They may go so far and co-develop products supervised by the firm (Von Hippel, 1986) or just participate in the generation of product ideas without covering further stages of the innovation process (Graham & Bachman, 2004). Each degree of involvement can be achieved by different integration approaches. Literature offers a great variety of solutions that can be derived from OI project descriptions. In order to categorise the approaches found during SLR and best practice search this study distinguishes different strategies that aim at innovation. Each strategy is related to one or more stages of the innovation process and therefore supports the sequence differently. Also, each approach comprehends different aspects of CK, such as ideas in general, design input, product improvements, feedback, experience, etc. and entails a different way to integrate it. The following overview introduces the most common approaches but does not claim to be necessarily exhaustive as it does not provide any quantitative significance.

The first step towards innovation starts with the generation of an idea (Figure 1). Customers, who are willing to provide ideas, can be found, e.g., in online communities, social networks, etc. On this level

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1 The bias towards examples from German-speaking countries is caused by the nationality of the author and shall not lead to the misunderstanding that other countries do not have suitable examples ready.
companies should try to motivate their customers to share their thoughts and experiences. The degree of involvement remains low because customers tend to communicate with each other rather than with the company directly. If a firm is aiming at a more controlled discussion and higher participation idea competitions (Terwiesch & Xu, 2008) provide the necessary environments. Such competitions focus on a limited group of customers who are invited to generate ideas in a limited time on a pre-defined platform. Through incentives and direct feedback companies can achieve a higher level of customer involvement (Ebner et al., 2009).

On the next level the best ideas are handed over to R&D. Here, customers can be invited as well. As participatory designers customers can bring in knowledge beyond problem definition and idea generation. This enables firms to “refine and validate the marketing positioning of a product through posting and receiving comments on the forum about the beta-test of its products” (Ramaswamy, 2010, p. 23). Using, e.g., “configurators, choice boards, design systems, toolkits, or co-design-platforms” (Reichwald & Piller, 2006, p. 7) companies can even guide their customers, through the configuration of products or variants of them. This approach leads customers over to traditional mass customisation and may involve activities within the final stage of innovation, where they can individualise a product by choosing from a set of options. Here, customers and their specific knowledge are also integrated to act as marketers.

Beside the above-mentioned approaches, the analysis illustrates the existence of strategies, which do not focus on a single or two stages of the innovation process. Some strategies can be applied throughout the whole process of innovation and thereby allow a deeper integration. Innovation competitions (Terwiesch & Ulrich, 2009), e.g., do not solely focus on the generation of ideas (Terwiesch & Xu, 2008). They also allow customers to accompany firms from the initial idea over an iterative review to the point of where the final product is sold. Crowdsourcing and interactive value creation have a similar focus. In both cases companies communicate tasks or problem descriptions to a group of customers and openly invite them to contribute to a solution (Ebner et al., 2009). While the former can be compared to outsourcing, the latter comprises a stronger focus on value creation. Nevertheless, the definition of both terms is blurry and not disjunctive (Helms, Booij, & Spruit, 2012). In contrast to idea generation and idea competition companies do not take sole responsibility for realisation of the ideas. In this broader view participants are also invited to support development, manufacturing and marketing (Figure 1).

### 4.2 Best practices

The subsequent sections each represent a category of actual projects, which were identified in current literature or practice. Their categorisation follows the differentiation made in section 4.1 and references the steps of innovation as suggested by Xu et al. (2010). Hence, the examples may be associated to more than one step of the innovation process. Plus, the overview also illustrates examples of service providers, which allow companies to use their platform to get in touch with a community, e.g. of researchers or design experts.

Due to the limited space in this paper, the following tables can only provide a limited number of examples, which each represent a larger group of OI projects identified during data collection. For each example the related company, starting year, name, and a short description of its focus are listed below.

**Idea generation.**

The collection of ideas from customers in addition to traditional idea generation (Sowrey, 1990) proves to be one of the most common approaches in current practice (Enkel et al., 2005; Von Hippel, 1978). Cooper and Edgett (2008) alone identified 18 sources of new product ideas in business and highlight the importance of voice-of-customer approaches and other OI strategies.

The timeline of projects identified in this study ranges from 2001 to 2012. This indicates that idea generation with customers involved within an OI context can look back to a longer history of successful projects. The examples all follow a similar routine, where the company provides a platform and
lets its customers discuss ideas brought in by users. This allows them to guide the process of ideation and to harvest the most valuable ideas. Table 2 illustrates a selection of projects:

<table>
<thead>
<tr>
<th>Company</th>
<th>Begin</th>
<th>Name</th>
<th>Focus</th>
<th>Source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP</td>
<td>2007</td>
<td>SAPens</td>
<td>Platform and community where new products and services can be submitted</td>
<td>Ebner et al. (2009)</td>
</tr>
<tr>
<td>Dell</td>
<td>2007</td>
<td>Dell IdeaStorm</td>
<td>Ideation community with sharing, discussion and voting functionality</td>
<td>Di Gangi &amp; Wasko (2009)</td>
</tr>
<tr>
<td>Starbucks</td>
<td>2008</td>
<td>MyStarbucksIdea</td>
<td>Ideation community with sharing, discussion and voting functionality</td>
<td>Piller &amp; Vossen (2012)</td>
</tr>
</tbody>
</table>

Table 2. Idea generation projects

Research and development.

During this stage companies may initiate, e.g., co-design projects (Piller, Schubert, Koch, & Möslein, 2006), allowing customers to bring in their knowledge for design development or during the creation of new products. Hence, this stage focuses on concepts (e.g., designs) rather than developing new goods and services. Table 3 illustrates some examples:

<table>
<thead>
<tr>
<th>Company</th>
<th>Begin</th>
<th>Name</th>
<th>Description</th>
<th>Source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peugeot</td>
<td>2000</td>
<td>Peugeot Concours</td>
<td>Design competition for cars</td>
<td>Wei &amp; Wei (2011)</td>
</tr>
<tr>
<td>Audi</td>
<td>2006</td>
<td>Virtual Lab</td>
<td>Design community for an infotainment system</td>
<td>Füller, Barl, Ernst, &amp; Mühlbacher (2006)</td>
</tr>
<tr>
<td>Swarovski</td>
<td>2008</td>
<td>Enlightened</td>
<td>Design competition for jewellery</td>
<td>Füller, Hutter, &amp; Faullant (2011)</td>
</tr>
<tr>
<td>SPAR</td>
<td>2009</td>
<td>SPAR Bag-Designcontest</td>
<td>Design contest for a new shopping bag</td>
<td>Bullinger et al. (2010)</td>
</tr>
</tbody>
</table>

Table 3. Research and development projects

Prototyping and manufacturing.

After the conceptual development of new products companies select the best drafts and hand them over to production. The aim of this step is to develop prototypes for further testing as well as manufacturing of marketable products. In this regard, this stage comprises marketable products created by customers or in collaborative environments.

On the one hand customers may be involved in product individualisation and mass customisation (Piller et al., 2006) where they contribute knowledge about needs and benefits in respect of potential product combinations. On the other hand customers may also contribute to co-creation (Piller & Vossen, 2012), co-production (Bendapudi & Leone, 2003) and testing of pre-configured products. Table 4 provides some examples:

<table>
<thead>
<tr>
<th>Company</th>
<th>Begin</th>
<th>Name</th>
<th>Description</th>
<th>Source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adidas</td>
<td>2006</td>
<td>miADIDAS</td>
<td>Individualisation platform for existing product</td>
<td>Moser, Müller, &amp; Piller (2006)</td>
</tr>
<tr>
<td>Volkswagen</td>
<td>2009</td>
<td>App my Ride Contest</td>
<td>Co-creation of mobile apps</td>
<td>Kelleher, Céilleachair, &amp; Peppard (2012)</td>
</tr>
<tr>
<td>McDonald’s</td>
<td>2011</td>
<td>Baue Deinen Burger</td>
<td>Co-creation contest of a new product based using a configuration tool</td>
<td><a href="http://www.mcdonalds.de/mein_burger/index.cfm">www.mcdonalds.de/mein_burger/index.cfm</a></td>
</tr>
</tbody>
</table>

Table 4. Prototyping and manufacturing projects

Marketing and sales diffusion.

The final stage towards a commercialised idea is covered by marketing and sales purposes. In this phase companies also tap CK, e.g., by involving them in co-marketing or social commerce strategies (Koch & Richter, 2009; Piller & Vossen, 2012). Here, customers provide valuable knowledge about the target group and its preferences, e.g., regarding sales approaches, packaging, distribution channels, etc.
Due to the fact that most of the above-mentioned examples (Table 2, Table 3, and Table 4) target marketable products and their commercialisation these projects already cover aspects of CK powered marketing. Nevertheless, there are projects, which focus on marketing and promotion and do not primarily intend to develop new products. Table 5 contains a selection of suitable examples:

<table>
<thead>
<tr>
<th>Company</th>
<th>Begin</th>
<th>Name</th>
<th>Description</th>
<th>Source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procter &amp; Gamble</td>
<td>2002</td>
<td>Connect + Develop Initiative</td>
<td>to turn more technologies into products</td>
<td>Dodgson, Gann, &amp; Salter (2006)</td>
</tr>
<tr>
<td>Google</td>
<td>2007</td>
<td>Gmail M-Velope Video Competition</td>
<td>Viral video-competition</td>
<td>mail.google.com/video</td>
</tr>
<tr>
<td>Pepsi</td>
<td>2009</td>
<td>Ultimate Refresh Competition</td>
<td>About a song and video to promote product</td>
<td><a href="http://www.ultimateorefresh.com">www.ultimateorefresh.com</a></td>
</tr>
<tr>
<td>Henkel</td>
<td>2011</td>
<td>Mein Pril – Mein Stil Design</td>
<td>Competition for labels of a washing-up liquid</td>
<td>Christoph Burnmann, Henmann, Eilers, &amp; Kleine-Kalmer (2012)</td>
</tr>
<tr>
<td>20th Century</td>
<td>2012</td>
<td>Dein Filmplakat Design</td>
<td>Competition about a movie poster</td>
<td>unseral-ler.de/Schlussmacher/Filmplakat</td>
</tr>
</tbody>
</table>

Table 5.  Marketing and sales diffusion projects

Integrated/cross-process.

In addition to numerous examples, which illustrate the adoption of projects focusing on single steps of the innovation process, other approaches do not stick to one stage (section 4.1). These include, e.g., innovation competitions, which cover the process of innovation from idea generation to commercialisation or innovation communities, “distributed groups of individuals focused on solving a general problem and/or developing a new solution supported by computer mediated communication” (Dahlander & Wallin, 2006, p. 1246). As Table 6 illustrates, the examples may overlap with projects mentioned in one of the previous stages:

<table>
<thead>
<tr>
<th>Company</th>
<th>Begin</th>
<th>Name</th>
<th>Description</th>
<th>Source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volkswagen</td>
<td>2009</td>
<td>App my Ride Contest Competition</td>
<td>About of mobile apps including ideas and customer-developed apps</td>
<td>Kelleher, Céilleachair, &amp; Peppard (2012)</td>
</tr>
<tr>
<td>Mari-Senf</td>
<td>2010</td>
<td>Senf-Dip Competition</td>
<td>Competition on mustard-bases products from flavour and ingredients to packaging</td>
<td>unseral-ler.de/mari_senf/senf_dip</td>
</tr>
<tr>
<td>Swarovski</td>
<td>2011</td>
<td>Lifestyle Electronics Design</td>
<td>Competition for consumer electronics</td>
<td>lifestyle-electronics-competition.swarovski-gems.com</td>
</tr>
<tr>
<td>Hibiscarin</td>
<td>2012</td>
<td>Hibiscarin Kosmetik Competition</td>
<td>Competition including product tests, idea generation, and marketing by customers</td>
<td>unseral-ler.de/Hibiscarin/HibiscarinKosmetik</td>
</tr>
</tbody>
</table>

Table 6.  Integrated and cross-process projects

The tabular overview gives examples the options companies can refer to if they are willing to utilise CK, but is not intended to be exhaustive.

Other possible strategies also include offerings by companies, which specialised on providing platforms for firms on which they can get in touch with a community or experts who solve tasks for them. This approach is often referred to as crowdsourcing. In exchange members of the platform receive rewards, prize money, or other gratifications. Typically, such ventures bring together companies with a large number of creators, inventors, designers, agencies or freelancers, depending on the focus of the platform. Additionally, many service providers concentrate on certain areas, such as product related safety, health, educational and environmental issues or designs and thereby set themselves apart from full-service providers. Other platforms give companies the opportunity to reach a community of potential customers, who test new products and spread word-of-mouth and influence the degree of popularity of a brand, e.g., among the circle of friends or beyond.

Another perspective arises from so called Idea Contests as a Service (Piller, 2007). Similar to current software delivery models for, e.g., Cloud Computing, MIS, HRM, or ERP solutions, idea contests can be sourced out to social media specialists instead of launching OI initiatives on one of the above-mentioned platforms or an own solution. Software service providers include, e.g., imaginatik, Brightidea, spigit, Pitchburner, yet2.com, or Skild.
5 Social software supported knowledge integration

While user innovation or customer innovation communities are not entirely new phenomena (Bullinger et al., 2010; Ebner et al., 2009; Fichter, 2009), improving information and communication technology (ICT) allow customers to extensively participate in innovation, e.g., through online communities (Di Gangi & Wasko, 2009) or innovation challenges. OI and crowdsourcing strategies strongly depend on a Web 2.0 infrastructure as well. To reach a community and potential customers beyond, firms do not need to rely on personal meetings anymore. Organisations can nowadays reach many of their customers through social media channels. Hence, their “innovations are reflected through the creation and exchange of user-generated content” (Helms et al., 2012, p. 3). In addition to that, virtual communities grant them access to a broad community with experts all over the world without higher expenses.

From an objective-centred perspective the implementation of innovation challenges and social software for CK integration offers three main approaches. First, some companies stick to the challenge, focus on idea generation or problem solving and expect a significant contribution to their enterprise. These examples prefer R&D or idea/design challenges on platforms, such as Innocentive, OpenIDEO, wiLOGO, or NineSigma. Although many providers also fuel the discussion, e.g., via twitter or Facebook, the focus of their programs clearly remains on the innovative output. Second, other companies try to generate ‘buzz’ or brand awareness around new products or competitions. In comparison to the above-mentioned examples, such companies stick to participatory marketing platforms, such as BzzAgent and trnd or use own platforms to stand out against other competitions and to avoid getting lost in a large number of projects on big-size innovation platforms (Table 2 to Table 6).

Both strategies have their own perils and virtues. While the latter may improve the recognition value of a brand, e.g., through coverage in media, without breeding an innovation, the former may, in case the challenge cannot be solved, deliver no results. Also, using third-party providers, e.g., for innovation challenges gives companies little control over the content end users post. Therefore, a third strategy, a hybrid approach, was discovered. It allows companies to benefit from both perspectives, but without guaranteeing them a highly innovative product or idea.

If we take a final look at the examples identified in this research, we see many examples that pursue one of the three strategies. When, e.g., Henkel initiated its “Mein Pril – Mein Stil” competition in 2011, they did not invite customers to innovate their washing-up liquid or provide any other product idea. Instead they asked them to re-design labels, thus, concentrating on the viral effects caused by over 50,000 creative workers (Christoph Burmann et al., 2012). McDonald’s also followed that path when they asked customers to design new burgers. By allowing participants to register via Facebook McDonald’s consciously targeted the social network’s wisdom of the crowd. Nevertheless, considering the fact that the winning creations were available for only a short period of time, this challenge could be also regarded as a marketing stunt rather than a serious attempt to innovate.

Volkswagen on the other hand pursued a rather hybrid strategy. Though the company’s core competences do not lie in software development, they launched a contest about smartphone apps for a future infotainment system. By inviting customers as well as coders and developers they showed interest in innovative applications not only in marketable ideas. Parallel to this, VW engaged in discussions on Facebook and established a twitter account. Therefore, this approach exemplifies how such a strategy can generate marketable products, i.e. apps, and also cause a ‘buzz’ in social media.

Other companies, which are primarily interested in ideas, solutions, or actual products, tend to engage on platforms like Innocentive, where they post a task, a due date and offer prize money. Most of these endeavors do not include participation in community action or feedback. Some companies even trigger challenges without being named as sponsor.
6 Toward an integration concept

Although the projects analysed above indicate that many companies deliberately chose a certain strategy projecting its outcome, they often waive the possibility that a well-executed OI project can result in more than grown brand awareness. One the one hand, the wisdom of the crowd can become the curse of the crowd. As occurred, when, e.g., when Henkel decided to change the rating system for entrants shortly before their contest ended, causing a ‘shitstorm’ and negative reviews in the community and by media coverage. On the other hand, integrating CK may provide valuable input for innovation from numerous ideas to actual innovative products.

![Figure 2. Customer knowledge integration across the process of innovation (cf. Bullinger et al., 2010; Xu et al., 2010)](image)

As mentioned in section 4.1, potential strategies can range from projects that cover just one part of the innovation process to those that cover the whole bandwidth. Figure 2 demonstrates the allocation of each approach to its respective stage(s) in innovation (not claiming to be necessarily exhaustive). It also illustrates the degree of elaboration (Bullinger et al., 2010) and, thus, the output of each strategy.

7 Conclusion

In this research the author analyses and categorises current approaches that support the integration of CK across the process of innovation. Based on a study of projects and platforms throughout literature and web sources the author derives a framework, which helps companies to distinguish between OI approaches with regard to their outcome or strategic claim. Hence, the central contribution of this research is the development of a framework that helps companies determining which strategies can be followed and how social media may support them. In this regard, the study emphasises the importance of social media in current user-centred innovation activities but only grazes conditions, success factor, potential pitfalls, and the particular suitability of certain social software applications for the different strategies. Beside this practical contribution the study also provides a more theoretical one by suggesting a categorisation for CK integration approaches across the process of innovation. In addition to that, the author identifies and explicates three strategic perspectives that differentiate objective-centred, marketing-focused and hybrid approaches.

Although the research questions could be solved, there are some limitations to be pointed out. The proposed framework should be regarded as an impulse for discussion and does not claim to be exhaustive. Nevertheless, the concept should provide a better description of advantages and disadvantages of the depicted strategies regarding output, barriers, etc. Therefore, one of the goals for further research is an evaluation, which should comprise a quantitative study (e.g. identifying the most common strategies), which will allow a deeper understanding of the categorisation. Also it should be evaluated if the framework can cover other sources of external knowledge or what distinctions have to be made regarding the complexity of the desired product, the degree of innovation, or the branch of the company (cf. section 1). A prospect that could not be covered in this research, but will be studied subsequently, is the evaluation of the given alternatives regarding their particular impact on innovativeness and competitiveness. Hence, suitable criteria are needed to develop a conclusive measurement (section 7).
References


