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Abstract

Recent advances in information and communication technologies have allowed companies to interact with external stakeholders, especially users, in a very efficient and effective way. As a result, more and more companies are striving to take advantage of these new opportunities and to harness the creative potential of their users by integrating them into core business processes. Successful companies like Threadless or Dell, which were designed to allow user innovation and co-creation from the outset, clearly demonstrate the potential value of such approaches. However, the introduction of user-centric value creation processes at established companies is a rather complex task, as it requires major adaptations to traditional manufacturer-centered business models. At present, little is known about how established companies can successfully implement user-centric business models. In this paper, we therefore explore (1) the success factors for attracting and engaging users in core business processes, and (2) effective strategies to overcome internal resistance when established companies introduce user-centric business models. We apply a multi-case comparison methodology between three well-known companies (LEGO, IBM and Coloplast) which have successfully integrated users into their core business processes. We find that the successful implementation of user-centric business models requires a comprehensive approach encompassing not only an appropriate social softwaredesign, but also a transparent intellectual property policy, proper incentive systems, evolutional learning and nurturing as well as employee empowerment.

1.   Introduction

Information and communication technologies have paved the way for completely new business strategies. Empoweredby the emergence of virtual rapid prototyping technologies and web 2.0 applications, companies are increasingly tapping the creative potential of users in

order to create sustainable economic advantages. As research has shown, this is a promising strategy: It is widely accepted that users can contribute substantially to a company's new product development process as well as the identification, evaluation and exploitation of novel business opportunities (von Hippel, 1998, 2005). This holds for companies of all ages and from nearly all industries, regardless of whether they operate in B2B or B2C markets (von Hippel, 2005; Bogers et al., 2010).

Interestingly, most of the pioneers which successfully capitalized on the integration of users into innovation and other business processes were start-ups or relatively young companies. The key factors enabling especially young companies to continuously exploit the creative potential of their users are their organizational flexibility and their willingness to employ innovative, user-centric business models. In contrast to older, more established companies, enterprises like Dell or Threadless are specifically designed to allow large-scale interactions with users and to integrate them into the most important business processes (Amit and Zott, 2001; Wirtz et al. 2010): Social software empowers users in the ideation, design and sometimes even in the selection and marketing processesfornew products, which in turn allows the firm to offer attractive new value propositions in a highly profitable way.In contrast to start-ups or other young and highly flexible organizations, established companies are usually not prepared to employ such novel methods and instruments in order to integrate users systematically and continuously into business processes and to benefit from their creativity. Therefore, in order to enhance their innovativeness, established companies have to (at least partly) re-organize their existing business models tomake them more user-centric (Teece, 2010). However, such changes are difficult to implement: Established companies in particular suffer from organizational inertia, which prevents them from effectively and efficiently making their business models more user-centric (Amit and Zott, 2001; Chesbrough, 2010; Wirtz et al., 2010).

The case of LEGO quite aptly illustrates the challenges faced by established firms attempting to implement more user-centric business models. Our team has cultivated long-standing relations with LEGO and was thus able to observe this transformation process very closely. LEGO's traditional business model suddenly came under attack when LEGO launched arobot

kit called LEGO Mindstorms in 1998. Only a few weeks after the product launch, a user hacked the Mindstormssoftware code and made it publicly available on the Internet. This rapidly gave rise toa vibrant user community which developed modifications, user guidebooks and refinements of the core technology. The incident caused a management crisis within LEGO, as executives realized that the firm's most valuable asset, namely the LEGO brand, was now out of their control. It was this external shock which caused executives to rethink the entire business model of the company. As a result, LEGO gradually started to transform its traditional business model into a more user-centric one and has even become a pioneer in finding new ways of integrating its creative fan base into core business processes.

While more and more companies nowadays are experiencing similar pressures from their user base, extant research provides only little guidance on the process of redesigning business models in general (Teece, 2010) and on launchingmore user-centric business models in particular. Basically, changing business models is seen as an iterative trial-and-error process. This is especially challenging for established firms, which cannot afford to make any mistakes when redesigning business models due to the potential negative effects on their existing business (Amit and Zott, 2001; Chesbrough, 2010; Christensen and Raynor, 2003; Christensen, 2006). Therefore, the objective of this paper is to shed light on the process of designing and implementing user-centric business models. We focus on the following research questions: (1) What are the success factors for attracting and engaging users in core business processes, and (2) what strategies are effective in overcoming internal resistance when established companies introduce user-centric business models?

On the basis of three in-depth case studies of pioneering firms in implementing users into business processes, namely IBM, Coloplast, and LEGO, we identify user-friendly platforms that trigger and leverage user-to-user interaction, an alignment of the solution space with corporate strategy, a transparent intellectual property (IP) policy, non-monetary incentives and company-to-user support via entrepreneurship programs and continuous feedback as success factors for attracting and engaging users in core business processes. Interestingly, the companies observed are quite deliberate in distinguishing between broad ideation via user communities and focused development work with selected users. Based on our in-depth case

studies, we also identify effective strategies for overcoming internal resistance to the introduction of user-centric business models. We find that successful transformation processes require a broad range of strategies including an evolutional learning approach, the collection of success stories to convince internal stakeholders, the provision of an ITenvironment which enables the company to benefit from user contributions, employee empowerment, and deliberate abstinence from hard financial performance measures in the early stages. Surprisingly, the successful transformation processes in all three companies emerged not from a top-down change management campaign, but from a bottom-up initiative, sometimes even under the corporate radar.

The remainder of the paper is organized as follows: In Section 2, we elaborate on the challenges to traditional business models created by advances in information and communication technologies which allow companies to integrate users into their value creation processes. We then summarize the research on business model change, pointing to the barriers that might hinder established companies from successfully adapting their business models toward continuous user integration. In Section 3, we describe our research approach, and in Section 4 we present the findings of our study. We then discuss the implications of our study for theory and managerial practice in Section 5,after which we present our conclusions in Section 6.

2.   Conceptual considerations and literature review

The logic of traditional business models

A business model describes the logic of how a business creates and delivers value to users and converts payments received into profits. As Teece (2010) puts it, "*[…] business models reflect management's hypotheses about what customers want, how they want it, and how the enterprise can organize to best meet those needs, get paid for doing so, and make a profit*". Drawing on this definition, business models can be characterized along four interlocking dimensions: the customer value proposition, the profit formula, key resources and key processes (Johnson, Christensen, and Kagermann, 2008). Today, the business models of most

established companies still follow the logic of what new product development literature calls the *manufacturer-active paradigm* (von Hippel, 1978). In this predominant perspective, it is the company which is exclusively responsible for creating and delivering value to the customers. Consequentially, customers only derive value by using the product or service. In this paradigm, key processes (new product development, marketing, etc.) and key resources (e.g. human capital, information, channels, etc.) are built and managed solely inside the firm. As a result of this company-internal focus, traditional business models often fail to systematically and continuously leverage the creative potential of the user.

The need for change toward more user-centric business models

As illustrated by the LEGO case, the traditional view on how companies create and deliver value does not reflect today's business environments very well. In times of more sophisticated and rapidly changing user needs, shorter product life cycles and rising competitive pressure, companies increasingly need to redesign their business models in order to master these new challenges and to gain sustainable competitive advantage. One avenue for business model innovation which has recently attractedmuch attention is the use of co-creation approaches with relevant external sources of innovation (Chesbrough, 2003; 2006; Füller, 2010; Huston and Sakkab, 2006). There is a rich body of research emphasizing the potential commercial value of integrating users into a company's core business processes. For example, users have proven to be an important source of innovation in new product development in many different industries (von Hippel, 1988; Urban and von Hippel, 1988; Herstatt and von Hippel, 1992; Riggs and von Hippel, 1994; Baldwin et al., 2006; Lettl et al., 2006; Jeppesen and Frederiksen, 2006; Füller et al., 2006; Füller, 2010). Furthermore, users may also provide support in the commercialization of new products. Recent research has revealed that users are able to come up with highly viable application ideas for existing products and/or technologies (DeMonaco et al., 2006; Henkel and Jung, 2010; Keinz and Prügl, 2010; Souder, 1989). Users might also support the new product diffusion process by creating a market pull effect within their peer communities which frequently spills over to the mass market (Hienerth and Lettl, 2011).

This new perspective on the importance of users for a company's core business processes has largely emerged from developments in information and communication technologies. These new technologies facilitate large-scale exchanges of textual, visual and acoustic data between the company and its users – as well as among the users themselves – at very low cost. This ability to get into contact with the user base has opened up new business opportunities for companies. For example, advances in rapid prototyping as well as toolkits for user innovation and design (Thomke and von Hippel, 2002; von Hippel and Katz, 2002; von Hippel, 2005) – such asLEGO's L-Draw– have paved the way for mass customization strategies (Pine et al., 1993; Franke and Piller, 2004; Franke et al., 2009). New generations of internet applications build on active social networks (web 2.0) and take the idea of user integration even further. They not only facilitate dyadic interactions between the manufacturer and individual users, but also offer users the opportunity to interact with each other and to share their prior knowledge, experience, ideas and innovative concepts with a community of peer users at low cost (von Hippel, 2001, 2005, 2007). As user communities are a vibrant arena for the development of new designs and may serve as a test market for user-generated designs in the pre-commercialization stage (Raymond, 1999; Kogut and Metiu, 2001; Franke and Shah, 2003; Shah and Trippsas, 2005; Baldwin et al., 2006; Hienerth, 2006; Fueller et al., 2006; Shah and Trippsas, 2007; Lettl et al., 2008, Di Gangi and Wasko, 2009), they have attracted a great deal of attention from scholars and practitioners alike (von Krogh and von Hippel, 2006).

However, simply introducing user communities, toolkits for user innovation and design, and/or web 2.0 applications is not sufficient to gain a sustainable economic advantage. Take the example of Mattel which had introduced a rather sophisticated toolkit allowing customers to design customized Barbie dolls. The new "MyDesign Barbie" line attracted so many orders that the supply chain and fulfillment system were unable to handle them within the promised time period. This resulted in dissatisfied customers and the abandonment of the "MyDesign Barbie" shortly after its introduction (Franke and Piller, 2004). The Mattel case shows that the integration of external stakeholders is not only a technological issue. Co-creation approaches usually heavily affect (at least some of) the key elements of a company's existing business

model. For example, integrating users into internal processes converts them from passive customers into a key resource that has to be managed thoroughly (Laursen and Salter, 2006; Di Gangi and Wasko, 2009). Furthermore, internal key processes (such as R&D or marketing) themselves need to be redesigned and openedup in order to allow the participation of "externals" (Hienerth and Lettl, 2011; von Hippel and Katz, 2002). Of course, co-creation may also affect the profit formula by changing the cost structure in R&D or the prices that can be chargedin the marketplace. Last not least, allowing users to co-create also includes an additional value proposition: In the co-creation perspective, users not only derive value from using a certain product which satisfies their unmet needs. The mere opportunity to co-create with the company or with other users frequently delivers value due to effects such as pride of authorship and increased self-esteem, perceived empowerment, learning from peer feedback, peer recognition, and the fun of creative tasks (Franke et al. 2008 and 2010; Franke and Schreier, 2010). To sum up, if users are to be integrated into a company's core business processes effectively and efficiently, companies require better insight into the fundamental changes associated with transforming their traditional business models into more user-centric ones (Chesbrough, 2010; McGrath, 2010; Teece, 2010; Wirtz et al., 2010).

In this paper, the term "user-centric business models" refers to business models designed to allow and even trigger "interference" fromusers inactivities at all stages of the value chain – from designing new products and developing production processes to crafting marketing messages and managing sales channels, etc. Table 1 provides an overview of the differences between manufacturer-centric and user-centric business models.

- INSERT TABLE 1 ABOUT HERE

As shown in Table 1, user-centric business models follow a completely different logic compared to traditional manufacturer-centric models. Managers planning to employ the former will be forced to answer the following questions (Prahalad and Ramaswamy, 2004): How can the firm interact with its users frequently and efficiently? At which stages of the value chain does the company seek user input? How much empowerment should the company grant its users at the different stages of the supply chain? How can the firm incorporate user

input into new product development and at the same time guarantee products in line with the company's strategy and quality standards? What about IP rights – do they remain with the users? How should revenues be divided between the company and contributing users?

Challenges associated with the transition to more user-centric business models

As discussed above, the emergence of new web 2.0-based internet applications and the resulting opportunities to continuously integrate users into the company's value creation processes call for adaptations in the core elements of business models. However, reorganizing a company's business model is a challenging task (Amit and Zott, 2001). First, organizational change in general demands high flexibility from management and employees (Schneider et al., 1996; Cummings and Worley, 2008). Very often, individuals within a company lack this flexibility, as they fear a loss of routines, status and/or power (Huston and Sakkab, 2006; Katz and Allen, 1982). This fear may prevent individuals within the company from recognizing the potential advantages of organizational change. In the case of user-centric business models, for example, at least some of the standard activities in the fields of R&D, production and marketing that have always been conducted internally will be carried out by parties external to the company, namely by the users (Huston and Sakkab, 2006). This shift is often perceived as a personal "loss" of control and expertise: If ideas for new products are collected within user communities and prototypes are developed by "lead users", employees in the R&D department might get the feeling that they are becoming superfluous. Such fears may exacerbate the "not invented here" syndrome: Employees may resist innovative ideas from outside the company, and inputs from company-external sources may be unconsciously considered inferior to ideas generated in-house (Katz and Allen, 1982; Cohen and Levinthal, 1990). As a result of this resistance to change, established companies in particular suffer from organizational inertia, preventing them from adapting to new environmental conditions (Hannan and Freeman, 1984; Leonard-Barton, 1992). Second, and possibly even more importantly, redesigning the entire business model is an especially challenging change process for the company. Any changes in already established business processes are not only inconvenient, but may even pose a threat to existing business activities. Adapting or expanding the old business model in a way that negatively affects current business might

cause substantial economic damage to the company (Amit and Zott, 2001; Christensen and Raynor, 2003; Christensen, 2006).

Due to the many challenges associated with shifting a business model toward continuous user integration and the potential threats within such a change process, practitioners urgently need methodologies, techniques and tools to help manage this form of business model change (Kettinger et al., 1997). Although we have seen a spate of consultants specializing in business process re-engineering and business model development, developinga traditional business model into a more user-centric one remains a risky and unpredictable endeavor (Faray et al., 2010). As business models usually cannot be fully anticipated in advance, they have to be designed over time through iterative trial-and-error learning (McGrath, 2010; Sosna et al., 2010). However, the literature on business process change at least provides frameworks pointing to the organizational subsystems usually affected by adaptations of the core elements of business models. For example, Kettinger et al. (1997) developed a business process change framework focusing on the subsystems of management (style, systems, risk propensity, measures), people (skills, behavior, culture, values) information and technology (data and information; information technology; decision, simulation and modeling tools; production technology) and organizational structures (formal organization, informal organization teams, coordination and control, jobs). In this model, changes to the different subsystems are analyzed and evaluated through the lens of business processes. The authors further presume that business process change is generally forced by environmental factors and aims to improve the company's performance in terms of flexibility and innovation, costs and quality of products and services, as well as customer satisfaction and shareholder value (Kettinger et al., 1997). In this paper, we refer to this framework as well as the work of Prahalad and Ramaswamy (2004) and Johnson et al. (2008) in our attempt to identify success factors in attracting and engaging users in core business processes as well as effective strategies to overcome internal resistance when established companies redesign their existing business processes and introduce adapted, more user-centric business models.

3.   Research approach

Overall research design and empirical setting

We use a multiple descriptive case study design to explore the contemporary phenomenon of established companies introducing user-centric business models. Our main motivation for choosing a case study designwas the lack of theory and empirical evidence (Yin, 2003; Eisenhardt, 1989) on how such companies develop new processes to involve users and their efforts to overcome barriers to developing new business models. We use the theoretical framework outlined above (Kettinger et al., 1997 and Prahalad and Ramaswamy, 2004) to deduce basic categories for case analysis. Out of a sample of companies participating either in the MIT Innovation Lab or the Danish User-Centered Innovation Lab, we selected leaders (prototypical cases) in the implementation of user-centric business models (see Table 2 in the Appendix for a description of the sample). One such prototypical case is LEGO: Besides its core business (producing play materials for consumers), the company introduced LEGO Factory in 2005, an electronic community and design portal that allows users to develop LEGO products and to inspire LEGO to createnew product lines. The cases of IBM and Coloplast have been added for the purpose of replication (i.e. observation of user involvement) and extension (i.e. variance in the specific processes of user integration, the type of industry, markets and products; Yin, 2003; Eisenhardt, 1989).[1]

The main limitations of this theoretical sampling process are twofold: First, we use retrospective data for analysis while we observe a contemporary phenomenon in whichthe cases are still evolving. Thus, while this sample is based on the achievement of introducing user-centric value creation, important data about the future impact and success with regard to the development of new product lines and new markets is missing. Second, this study deals with large, established companies that happened to introduce user-centered value creation in parallel to their core innovation processes. As a result, insights from their experiences might not hold for all types of companies and settings. Promising avenues for further analysis that go beyond the scope of this research (Eisenhardt, 1989) could thus include variations in the

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[1]See Appendix for a detailed overview of the cases, the starting point of user-centered value creation, and industry, market, product and process variations for case extensions.

success of introducing user-centric value creation, in the size and age of companies, and further variations in the industry setting.

Data collection and analysis

The data was collected between 2006 and 2010 and involved different forms of involvement as outlined in Table 3 in the Appendix. In the first stage, we carried out 26 informal orientation interviews with members of the Danish User-Centered Innovation Lab and the MIT Innovation Lab (mainly R&D managers from member companies and international researchers in the field of innovation). The goal in that stage was to identify companies that would form an initial set of pioneering cases to study the process of developing user-centric business models, and to gain initial insights into innovation practices and processes. On the basis of our involvement with the two different labs, we launched concrete research projects with LEGO, IBM and Coloplast between 2007 and 2008. These research projects enabled us to gain detailed insights into the individual innovation processes of the three companies.

In the second stage, we carried out the actual data collection and reduction processes, combining interview data, participant observation, secondary data and netnography (i.e. observing community communication patterns and innovation processes in the online LEGO, Coloplast and IBM forums). In all three cases, we used two methods to identify interview partners: snowballing (asking interview partners for other people involved in the cases) and screening (searching for potential interviewees on the companies' web pages and on electronic community pages related to the processes analyzed). For the interviews, we used a semi-structured set of guidelines (slightly adapted for the different types of interviewees) which included questions pertaining to the theoretical framework and research questions. This process actually started with the set of categories deduced from the theoretical framework. The three main categories – environmental factors, organizational subsystems, and outcomes – were divided into subcategories, with environmental factors comprising external pressure and external communities independent of the company.Organizational subsystems included information and technology, people, organizational structure and management, and outcomes

comprised products, services and performance. The basic questionnaire is provided in the Appendix.

Starting with LEGO, we participated in strategy workshops and management meetings over a one-year period and organized three one-week visits on site at the company's headquarters in Billund, Denmark, between 2008 and 2009. In the same period, we conducted ten interviews with managers from various departments. Furthermore, we carried out five interviews with lead users of LEGO products in 2010; these lead users were identified through LEGO's Certified Professionals program, meaning that they had commercialized a radical innovative idea based on a specific personal need.

At Coloplast, one of our research assistants participated in a community and lead user project between 2008 and 2009, gaining deep insights into the innovation processes involving users at Coloplast.These efforts led to the "SIBY" (stoma innovation by you) case. We conducted nine interviews between 2009 and 2010, namely with the Senior Vice President of Global R&D, the Director of Co-creation, the Senior Principal Scientist for Future Innovation Methods, the members of the "stoma innovation by you" project group, the web administrator, and community members.

As for IBM, the authors participated in the "Global Innovation Outlook", which was part of IBM's"Innovation Jam" activities in 2008 and 2009. Subsequently, we conducted eight interviews (in 2010) with the Program Director for Open and Collaborative Innovation, members of three different departments (Corporate Communications, Business Development and Marketing) as well as members of senior management. A complete list of the interviewees is provided in the Appendix.

In a third stage (verification), we collected additional information on the case companies by looking at data from web sites, magazines, scientific journals, company reports and industry databases, mainly to find exact descriptions and figures regarding the development processes of interest and to collect historical data spanning a period of three years. Furthermore, we applied netnographic research. All data were transcribed or copied into text format and then compiled in a single content analysis project implemented in QSR Nvivo. Details on the

coding process, whichyielded 32 codes in the area of success factors for attracting and engaging users in core business processes, 33 codes in the area of strategies to overcome internal resistance (resulting in 5strategies),areprovided in the Appendix. Finally, the findings generated were handed out to key interview partners and complemented with follow-up interviews for validation in late 2010.

4.   Findings

As outlined in the theory section of this paper, our research framework systematically focuses on changes to the most important organizational subsystems (management, people, organization and IT) associated with making an established company's business model more user-centric by adapting its value proposition, profit formula, key resources and key processes. Using three in-depth case studies, we aim to identify 1) success factors inattracting and engaging users in core business processes, and 2) effective strategies to overcome internal resistance within established companies when implementing a user-centric business model.

The starting point for our case analysis is the "traditional" manufacturer-centered business model which had been implemented in each of the three cases selected. Until just a few years ago, all three companies usedsome form of traditional stage-gate model and mainly in-house R&D development processes in order to generate and commercialize new products. However, the idea of tapping into the creative potential of external stakeholders in order to gain economic advantages was not necessarily new to any of our case companies. Each of the three companies had already developed a specific way of collecting valuable information from customers and other stakeholders for the purpose of new product development. LEGO, for example, had introduced its "Mindstorms" bricks in the late 1990s, a line of programmable robotics/construction toys which users could adapt to various use situations. User modifications – as a source of inspiration – then formed the basis for the in-house development of standard products. In contrast, Coloplast has a rather long tradition of integrating professionals into the process of developing medical products. The company has hosted periodic workshops with nurses and physicians for decades. In the case of IBM, the

company had approximately ten years' experience in tapping into their employees' and customers' creative potential for the purpose of creating new product or service ideas or resolving other issues of vivid importance. IBM started with ideation competitions via the corporate intranet, an initiative which gradually evolved into the well-known "Innovation Jam" project.

Although integrating users into idea generation as such is not new to our case companies, the process of systematically aligning the organizational subsystems with continuous user integration in order to adapt the four core elements of business models did not truly begin until the introduction of the specific projects and initiatives presented in the cases below. As a result, these projects provide a rich field for detailed investigation. Our further analysis therefore focuses on investigating the design and introduction of these new projects and initiatives, which enabled the case companies to open up to a multitude of users and to process user input electronically in new product development, production, and marketing.

The findings section is organized as follows: We start with brief descriptions of our three cases, after which we present what we consider to be the crucial design features (of user-centric business models) which can be derived from our cases. Finally, we present the strategies identified in our three case companies as means of overcoming resistance to the implementation of user-centric business models.

Short case descriptions

LEGO "Factory"

The LEGO Group is a privately held company based in Billund, Denmark. The company is still owned by the Kirk Kristiansen family, which founded the company in 1932. The group has become famous for its LEGO bricks. Today, it provides toys, experiences and teaching materials for children in more than 130 countries. The LEGO Group has approximately 8,000 employees, and it is the world's fifth-largest manufacturer of play materials, with annual sales of about USD 2.177 billion in 2009 (www.lego.com, 2010).

Historically, LEGO started out with and maintained a traditional innovation strategy (referred to as "LEGO developed, LEGO published"), with internal R&D development, professional designers and strong emphasis on protecting and controlling its brand and intellectual

property. However, this strategy was changed as a result of LEGO's experiences after the introduction of Mindstorms. Having realized the creative potential of its fan base, LEGO started to systematically link users to the company for the purpose of continuous co-creation. One major result of this effort was the introduction of the LEGO Factory platform. The main motivation for setting up this platform was to leverage the creative potential of LEGO's huge fan base. Consequently, the company launched a customization program based on a toolkit known as L-Draw, which was originally developed by an enthusiastic fan. Since the launch of LEGO Factory, the company has experimented with a number of web 2.0 tools in order to forge closer links with its fan base. Through LEGO Factory, users can create any new design with the full range of existing LEGO bricks. Users can freely exchange designs and build on each other's creations, thus further empowering the LEGO community. Besides benefiting from the use of individual designs, users are also allowed and even encouraged to commercialize their creations to peers. These new activities completely changed LEGO's existing business model in terms of the firm's value proposition as well as itsprofit formula, key resources and key processes.

Coloplast "stoma innovation by you"

Coloplast is a Danish company which develops products and services in the medical fields of ostomy care, urology and continence care as well as wound and skin care. The company operates globally, generates revenues of about USD 1.647 billion per year (as of 2009), and currently counts more than 7,000 employees (www.coloplast.com, 2010).

Coloplast has a long history of integrating users and professionals into their new product development processes. The company was founded in 1957 by a determined Danish nurse (confronted with the need to develop a solution for colostomy) and an engineer. Through the ColoplastOstomy Forum (COF), the company gained experience in involving users in open (face-to-face) forums on a regular basis in order to collect ideas and solutions for the improvement of existing products and the development of new products. Up to 700 nurses and medical personnel meet Coloplast development staff to co-create at such meetings. In 2008, the idea for an electronic forum to interact with users (with a focus on patients) was initiated on the basis of COF's success and the rise of online communities. The idea is to invite

patients to contribute ideas and – if their ideas seem promising – to equip them with a physical toolbox consisting of stoma modules, or to invite them to co-create a new solution. On the initiative of a single person within the marketing department, a prototype was developed and launched experimentally. The project was referred to as SIBY (stoma innovation by you). The motives for starting this process were threefold: First, the company wished to get into contact with end-users who possessed firsthand experience with the challenges and problems of existing stoma solutions (the term "stoma" here refers to a colostomy, which is a surgically-created opening in the large intestine that allows feces to drain into a pouch or other collection device, thus bypassing the rectum). Second, the organization wished to attract a larger number of users and a more heterogeneous group of people. Third, the company wanted to create a platform on which users could also provide each other with support, thus increasing satisfaction with existing products and even further improving loyalty and attitude toward the brand. The new community currently hosts around 1,800 users and actively fosters co-creation. Asin the case of LEGO, the community has become an important resource to Coloplast that has changed not only the way in which new products are developed (one of Coloplast's key processes), but also the company's cost structure in new product development (i.e. the profit formula).

IBM "Innovation Jams"

IBM (International Business Machines) is a multinational computer and technology corporation based in Armonk, New York. It is the world's fourth-largest technology company, with approximately 400,000 employees and annual sales of more than USD 100 billion in 2009 (www.ibm.com, 2010).

Lacking effective mechanisms to address urgent issues and to come up with innovative ideas because of its size and organizational complexity, IBM launched a new project called "Jam" in 2001. The basic idea underlying this initiative was to use the company's global workforce in order to get inputs to resolve high-priority problems or tasks. The first jam revolved around defining corporate values. Later jams focused on a variety of topics, for example the generation of ideas for new products and services or the improvement of internal processes. Using the company's existing intranet, IBM created an online platform which allowed

employees to exchange information and discuss ideas across physical or organizational boundaries and hierarchies. Encouraged by the success of the initiative, IBM decided to take the idea of "crowdsourcing" to the next level and to make it an ongoing activity anchored in the company's innovation strategy. Since 2006, IBM has regarded these jams as a regular management tool. Today, they are open not only to IBM employees but also to their family members as well as a broad spectrum of external groups, including partners, suppliers, customers, and other valued stakeholders; IBM's 2006 jam attracted a total of 150,000 participants. As a result, the jams are no longer carried out via IBM's intranet. In order to enable company-external individuals to participate, IBM created an independent, user-friendly platform. The success of IBM's jam initiative has by far exceeded all expectations, and the company has invested more than USD 100 million in new business units arising from ideas generated in several dozen IBM-internal jams. Furthermore, IBM has begun selling its expertise in setting up and managing jams to other companies, thereby openingup a completely new business area. Thus, the whole jam initiative not only directedIBM's attention toward a new key resource (external jam participants) and led to a new key process (the jam itself), but also changed the profit formula by introducing a new consulting service.

As our case descriptions demonstrate, LEGO, Coloplast and IBM share some important characteristics which helped them become pioneers in user innovation: First, all of the companieswere quite sensitive to what was going on among the users of their products. As soon as they realized the desireand the potential of users to contribute to the company's key business processes, they openedup and took the risk of allowing external parties to participate. Second, each of our case companies had the position of an industry leader and possessed a strong brand. Naturally, this helped to attract "fans" of the company to participate in user innovation initiatives and paved the way for success. However, these preconditions alone are not sufficient to ensure success with user-centric business models. In the sections that follow, we present success factors of these business models as well as strategies to overcome internal resistance against their implementation (as identified by looking at our case companies).

Success factors in attracting and engaging users in core business processes

The success factors presented here are important pillars of user-centric business models which involve users electronically and continuously on a large scale. They include methods, instruments and processes which facilitate the continuous integration of users into innovation and co-creation activities as well as other business processes. We analyzed the three cases with regard to similarities and contrasts as suggested in Eisenhardt (1989) and Yin (2003) andTable 4 gives an overview of the seven specific aspects identified. While we basically find high similarity across the cases, contrasts and dissimilarities arise due tothe different industries involved, the different stages of development of each process, and the intended goals.

- INSERT TABLE 4 ABOUT HERE

Triggering real-time user-to-user interaction via user-friendly online platforms

The first very important success factor foruser-centric business models is the presence ofa mechanism which triggers user-to-user interaction. Each of the three case companies proactively facilitates the exchange and discussion of ideas among users by providing a powerful yet user-friendly platform, including tools such as open forums which allow communication in real time. The rationale behind this idea is simple: The larger the number of people from heterogeneous backgrounds who argue, comment, give feedback, and work on a certain idea or concept, the better and more sophisticated the solutionwill be in the end (which makes R&D more effective and therefore affects the company's profit formula). For example, IBM replaced its intranet with a novel tool open not only to employees but also to external participants; the new platform could handle hundreds of thousands of users at the same time and allowed the exchange of written as well as graphical information. In order to foster interaction, IBM even monitors the online discussions during a jam and – if they feel that a certain group of people with relevant expertise has not participated so far – selectively invites employees with specific know-how to join the jam. However, enabling peer-to-peer interaction not only increases the quality of the ideas or concepts generated by users: Peer-to-peer interaction is also part of a new value proposition, as participants usually appreciate the opportunity to communicate with others and to receive acknowledgements from peers when contributing valuable inputs.

Interestingly, the importance of peer interaction declines in the stages subsequent to the ideation process, such as idea refinement and the generation of concrete concepts or prototypes. The companies usually manage and control these later phases more intensely, which leads to more direct company-to-user interaction. Coloplast, for example, invites those users who contribute the most promising ideas to join a cross-functional team devoted to the further development of a new product concept. This "closed-room" strategy in the later phases (as it is called by the senior R&D manager at Coloplast) is partly due to the IP strategies adopted by the three case companies.

Transparent IP policy

Although the underlying preconditions differed greatly among the three case companies, they have chosen very similar ways of dealing with intellectual propertyissues. In each of the three cases, participants are asked to transfer all intellectual property rights toideas or concepts generated in co-creation activities to the company, allowing the case companies to accumulate know-how-related assets at low cost (which affects the business model elements of "key resources" and "profit formula").

In the case of IBM, for example, every participant in the Innovation Jam has to accept the "jam rules". They state that participants should not share pre-existing, protected know-how or intellectual property of any kind during the jam, as its results are intended to be used and exploited by the company. However, IBM also states that the results can be taken up by any participant. Thus, all contributors are invited to "*take any of the ideas developed here [during the jam] and do with them what they want*", as IBM's Program Director forOpen and Collaborative Innovation puts it. Asking participants to transfer all intellectual property rights is therefore more a protective measure to avoid disputes regarding IP rights among users than an attempt to prohibit others from exploiting valuable ideas. The policy of offering all contributors the chance to take up ideas and related material (such as drawings and plans) generated within the community is based on two important considerations: First, openness and fair distribution of the output of co-creation (or the ideas generated) areimportant means of creating a senseof community and also serve as a kind of incentive to participate. Second, the experiences of our case companies show that most of the initial ideas and concepts generated

within the community are usually not mature enough or suffer from other problems which already prevent them from being patentable. However, as soon as the process reaches the stage of further developing the initial ideas intomore concrete concepts or prototypes, the issue of intellectual property rights becomes more important: Those users invited to contribute further to the development and commercialization of a particular idea have to sign a special waiver in which they again agree to transfer any property rights to the company.

Non-monetary incentive system

Interestingly, none of the companies under investigation apply a system of monetary rewards for users participating in the ideation phase. The three case companies rely mostly on their users' willingness to co-create for the benefits of a) being valued as an equal partner, b) having the opportunity to work on new or the improvement of existing products and services that better fit their needs, c) being recognized by peers, and d) being allowed to take up every idea generated during the ideation process. Obviously, being integrated into the companies' core business processes has become a major aspect of the value proposition delivered to the users. Coloplast and LEGO created an additional incentive by awarding core contributors a special status: These contributors are taken out of the online community's anonymous population and invited to attend special offline events (e.g. trade fairs) or to join internal R&D teams, to name just two examples. In addition, Coloplast awards "Coloplast points" to its contributors, allowing them to receive small promotional gifts from the corporate webshop. In the case of IBM, contributing to the company's strategic goals and economic development is part of the corporate culture and constitutes an additional motivating factor for participants, most of whom are in-house employees. However, LEGO, Coloplast and IBM have developed different forms of (quasi-)monetary incentives for those users who not only contribute ideas but also provide support in the later stages of evaluating and exploiting business opportunities. In the case of Coloplast, users integrated in the further development of concrete concepts and/or prototypes are paid a daily standard consultancy fee. In contrast, LEGO and IBM have adopted ways to enable users to share in the benefits arisingfrom developments based on their ideas. Detailed information on these arrangements ispresented along with the next key design feature.

Establishment of a user entrepreneurship program

As described above, two of our three case companies offer their users the opportunity to participate in the exploitation of co-created business opportunities as a means ofengaging them in core corporate business processes. LEGO, for example, allows its LEGO Factory users to become entrepreneurs themselves and to sell their self-generated products under the LEGO brand. The company's support also includes highly favorable purchase prices as well as advice on legal issues and co-marketing. In 2008, LEGO established an incubator for user entrepreneurs at its headquarters in Billund. This user entrepreneurship program is mutually beneficial to the company and the user entrepreneurs. LEGO benefits from the users' entrepreneurial efforts because they enable the company to identify promising new business opportunities which it might not have discovered in-house. Furthermore, users take on entrepreneurial risks that a manufacturer usually has to bear when introducing completely new product lines. For LEGO as a company, the system ensures continuous market exploration and new business development.

IBM also provides generous budgets for the purpose of bringing the ideas from its Innovation Jam program to life. So far, the company has spent some USD 100 million in order to facilitate new ventures (often in the form of spin-offs) based on ideas generated during the jams. In many cases, contributors with know-how related to a specificbusiness opportunity are invited to participate in these entrepreneurial activities. In contrast, Coloplast's payment of consultancy fees is the exception. The company has opted for such fees instead of user entrepreneurship programs due to legal considerations. In the field of medical equipment, single users are unlikely to commercialize their ideas successfully on their own because of the long and stringent approval procedures involved, meaning that a user entrepreneurship program is not likely to be a realistic option.

Naturally, user entrepreneurship programs such as those implemented inour case companies affect most of the business model's main elements: The opportunityto become an "entrepreneur" and to exploit ideas and concepts co-created with the focal company has become an important part of the value proposition to users. At the same time, licensing out

ideas and concepts to user entrepreneurs also influences the company's profit formula and becomes a new key business process.

Alignment of solution space with corporate strategy

External stakeholders participating in the key business processes are not formally associated with the company and are therefore free to work on those problems/aspects which are most interesting or relevant to them. Especially in the ideation phase, which is usually based on user-to-user interactions in online forums or on other online platforms, it is almost impossible for the company to control discussions or ideas by way of directives. In order to increase the likelihood that the efforts of the crowd will yield useable outcomes, the three case companies try to guide the contributors'activities in predetermined directions. This new task has become a key process which commands a great deal of attention within the three case companies. For example, IBM has introduced a preparation phase prior to actual jam events in order to somehow channel the activities during the jam. During this phase, registered participants are provided with information about the jam's goal, the jam rules and online materials familiarizing them with emerging technologies as well as existing products/services/processes and their specific problems. In the LEGO case, the company equips users with an online toolkit for user innovation and design. The toolkit also limits the solution space, as users have to draw on existing brick modules. In contrast, Coloplast decided to provide its users with real toolkits comprising prefabricated stoma parts, thus allowing them to develop new products compatible with existing production systems and complementary components. From a participant's perspective, the instruments and tools used to align the solution space with corporate strategy deliver another very important benefit: Providing participants with information, tutorials, and toolkits enhances their problem-solving capabilities, at the same time reducing the complexity of the innovation-related tasks. Thus the activities presented above can also be interpreted as a form of support to participants whichhelps them deliver (useful) contributions. However, limiting the solution space alone does not seem to be sufficient to align the activities of company-external individuals with corporate goals. Our three cases employ what we call "management by topics and competition" in order to direct user-driven co-creation processes. Coloplast, for example, organizes idea competitions in

which those users who come up with topic-related ideas enhance their chances of benefiting from the incentives presented above. This procedure helps focus peer-to-peer interaction and reduces the number of forum threads which do not contributeto solving the problem defined by Coloplast. IBM, in contrast, appoints "facilitators" who are responsible for monitoring discussions throughout a jam in real time; if afacilitator notices off-topic communication or "dead end" discussions, they remind participants of the purpose of the jam event. In cases where participants endanger the entire process, for example by posting destructive comments or exhibiting a lack of netiquette, facilitators might lock the troublemaker out of the jam. At LEGO, specific topics or areas can also become fields for user competitions. Furthermore, LEGO's adult fan community regularly holds user fairs/conventions at which professional designers and users come together to displaytheir latest achievements.

Continuous communication and feedback loops

In order to ensure continuous, long-term user involvement and participation, all three companies have adopted large-scale feedback processes. After each jam, IBM publishes reports summarizing the core ideas as well as key findings and giving an outlook on future steps towardrealizing those ideas. The jam reports also include acknowledgements of the top jam contributors. Coloplast also regards feedback processes as a central factor influencing the users' willingness to contribute on a continuous basis. Therefore, when a department within the company wishes to publish a competition on the SIBY platform, it has to appoint a project manager, whose duties include interaction with and feedback to participating users. In the case of LEGO, systematic feedback to contributors is also a high priority. Feedback is provided in different forms: First, LEGO has trained and appointed moderators, whose task is to provide feedback to LEGO Factory users and to communicate the company's corporate goals and values. Second, LEGO proactively triggers peer-to-peer feedback among the contributors. Those users who are especially active in providing feedback on others' contributions are awarded a special "reviewer" status and publicly praised within the community. Third, LEGO managers are asked to provide users who have contributed interesting ideas or concepts with feedback and information on the next steps within the company if they decide to take up those ideas and to develop them into standard products.

Effective strategies to overcome internal resistance

In this section, we present insights on how to implement user-centric business models despitepsychological barriers such as the "not invented here" syndrome or the fear of loss of control as well as organizational barriers like organizational inertia. In studying the three case companies, we chose a process perspective deduced from our theoretical framework. Patterns arise from cross-case comparisons in three distinct areas: environmental aspects, organizational subsystems and goals/outcomes. We summarize these patterns in the cross-case pattern matrix below, which is based on the cross-case data display strategies proposed by Miles and Huberman (1994).

- INSERT TABLE 5 ABOUT HERE

Strategy 1: Launching the initiative as an experiment and improving through evolutional learning

This strategy refers to the "internal processes" subsystem within our framework. It addresses the question of how to implement the new business processes without taking the risk of immediate rejection by company employees. Thus, this strategy addresses both psychological barriers (e.g. the fear of loss of control amongmembers of the R&D department) as well as organizational barriers (e.g. organizational inertia prohibiting major changes in business processes).

In our three case companies, the processes intended to foster continuous user integration and co-creation were not announced and implemented as novel, obligatory standard procedures resulting from a major shift in corporate strategy. Instead, the different initiatives at IBM, LEGO and Coloplast all started as "experiments" without precise planning or pre-defined expectations regarding the outcome. IBM's first jam in 2001, for example, was a rather elementary attempt to see whether the global and heterogeneous community of IBM associates (the workforce and their relatives) could itself be turned into an asset by generating ideas as a "byproduct". The jam was held on the corporate intranet and was only accessible to employees and their families. Support was available in Englishonly. Improvements to the process and infrastructure have been made iteratively over the past ten years on the basis of

experience gained by the "core team" (see below) and the users involved in the jams. With each jam, the company learned how to advance its process template in order to increase the efficiency and effectiveness of this global and virtual brainstorming session with more than 150,000 contributors. Important elements of the process template include the description of the jam's objective, the protocols for collaboration, and the integration of external stakeholders (e.g. customers, universities) as well as internal stakeholders (i.e. which executives from which business units should be integrated as innovators, moderators or evaluators at which stage of the brainstorming process). Coloplast and LEGO followed a similar strategy: LEGO also developed its infrastructure over time on the basis of user input. The online toolkit was not available right from the start. Once a LEGO fan had programmed a toolkit that would allow other users to iteratively design their own figures, characters and buildings online, LEGO made it available to its entire user base in order to attract a large number of participants. According to a senior R&D manager, Coloplast also started the SIBY completely "*under the corporate radar with very low cost*" and with only one employee driving the project (in addition to his other duties). The idea behind this strategy was to start without high investments (which would have killed the initiative before it started), to learn early lessons on how to improve the initiative before making it a standard corporate procedure, and to get an initial proof-of-concept, with the latter point being important for selling the initiative internally and justifying additional funding (see next strategy).

Strategy 2: Collecting and distributing success stories to convince internal stakeholders

Recounting success stories about user integration and co-creation turned out to be a very important strategy for convincing the management and employees in all three case companies and forovercoming psychological barriers such as the "notinventedhere" syndrome. This strategy can therefore be assigned to the "people" subsystem within our theoretical framework.

As stated by the promoters of the projects examined at IBM, LEGO and Coloplast, selling the idea of integrating users into core business processes within the company – especially to top management – turned out to be a major challenge. In order to convince the management as well as the employees, the promoters collected "success stories" during their early

experiments with user integration. For example, a senior R&D manager from Coloplast pitched the co-creation idea by presenting a user called "Lenny" and his latest work on a new stoma system which he had distributed via the SIBY forum. Lenny had created accurate drawings and even a first prototype, which was comparable in quality to those of the internal R&D unit. Equipped with Lenny's and other success stories, the R&D manager was able to alleviate the "not invented here" syndrome, which manifested itself in concerns regarding the users' willingness and ability to contribute ideas and concepts of value to the company. In the case of IBM, the rousing success of the first jam in 2001 (more than 50,000 participants) prepared the ground for considerable investments in improving the infrastructure needed to conduct jams on a regular basis.

However, the importance of such success stories does not fade after the implementation of auser-centric business model. Summarizing and communicating the positive effects of specific initiatives is another ongoing process in all three case companies.

Strategy 3: Provision of an IT environment which enables the company to benefit from user integration

Another strategy in developing traditional business models into more user-centric ones is the adoption of an IT environment which enables the company to manage and process user inputs so that it can benefit from them. This strategy obviously addresses the "IT" subsystem within our framework. It is employed to help overcoming the "notinventedhere" syndrome by increasing the appropriateness of externally generated ideas and conceptsand convincing employees oftheir potential and quality.

In all three case companies, IT tools were introduced not only to facilitate large-scale user interaction and better co-creation outcomes, but also to enable the company to process the information gathered. IBM, for example, has adopted an automated data mining tool called COBRA in order to identify and group topics of special interest within the virtually unmanageable number of forum discussions during a jam. This software is also highly important forgathering indications of how to develop an initial idea further and forfinding individuals who possess the expertise to continue working on the idea after the end of the jam. Coloplast also complemented its offline user events (such as focus groups) with a digital

environment. The SIBY platform, which is basically a discussion forum, is not only a communication platform but also a kind of storage area that can be browsed occasionally to check for valuable ideas that have been overlooked thus far. LEGO's toolkit for user innovation and design has also proven valuable to the company. By observing the ideas and design activities of LEGO users online, the company has been able to identify new trends and to draw on the most successful designs when developing new products or product lines in-house.

Strategy 4: Shifting the process, responsibility and required capabilities to middle management and employees

The next strategy addresses the "people" and "organization" subsystems. It is about shifting at least some parts of the user integration process and the associated responsibilities away from top management to middle management or to selected employees. However, this strategy for encouraging acceptance of the new business model, which was observed in all three case companies, also requires complementary training and education for the managers and employees involved.

In none of the three case companies can we find a central organizational unit fully responsible for user integration. Instead, there are small teams of people experienced with user integration and co-creation who provide support for unit or division managers planning to tap into the creative potential of users. The "core team" in the case of IBM's Innovation Jam, for example, consists of four people located in the US. They are in charge of organizing and providing technical support not only to global innovation jams, but also to local jams sponsored and conducted by IBM country managers. The core team helps to set up and train local jam teams in defining jam goals, identifying and inviting people with the required experience, keeping discussions alive during the jam, bundling and evaluating the ideas generated, and reporting the results. Thus, most management activities during a jam are carried out by IBM employees temporarily appointed to act as jam facilitators. Consequently, responsibility for the process and its outcome lies with the (country) managers running the jam. The same is true of Coloplast. If a division manager wishes to set up an idea competition for a new product or service within her field, she has to undergo special training and appoint a

project team responsible for participating in the discussions on the SIBY platform and for giving feedback to contributors. At LEGO, employees basically have three options with regard to the effort put into development processes involving users. In the LEGO Factory electronic forum, employees can take part in development processes initiated by users online. They can also extract ideas for internal development and bring projects into internal R&D (probably together with the LEGO fans) to work on new products jointly. Finally, they can also become supporters of LEGO entrepreneurship projects, in which case they follow a new venture from the original idea to the product commercialization stage and even further in successive business development stages.

Strategy 5: Assessment of success using "soft" measures instead of "hard" financial measures at the beginning of the initiative

The last strategy visible in our three cases is related to the "management" and "goals" subsystem in our framework. It is concerned with the development of appropriate measures to assess the success of user innovation initiatives. This is an important topic, as the initial success of such initiatives obviously helps to overcome organizational inertia and affects decisions about further investments in the projects.

Interestingly, none of our case companies cited an urgent need to increase their level of innovativeness or annual sales as a trigger for the introduction of user-centric business models. Although higher performance in commercial terms is an important ultimate goal at all three case companies, they focused on some intermediate non-monetary goals wheneintroducing user-centric business models. Their primary motive for tapping into the field of continuous user integration was a growing awareness of the user innovation phenomenon within the corporate environment. As mentioned above, LEGO and Coloplast by chance came across users who innovated, and the companies began to wonder whether and how they could make use of this development triggered by advances in information and communication technologies. Likewise, IBM did not primarily pursuehard commercial goals when introducing the jam idea. As mentioned above, it was more an attempt to create a feeling of community among their associates and to generate some good ideas in the process. The three case companies have consistently refrained from employing hard monetary measures in

evaluating the success of their initiatives. Instead, they have evaluated the initiatives on the basis of the "buzz" created in their user communities and positive spillovers onto the company's reputation. Applying such "soft" measures has a positive effect on the acceptance of such experimental user integration projects: They do not draw attention to cost/benefit calculations,which might be unfavorable (at least shortly after the introduction of user innovation initiatives) and could thus be seen as a reason to stop long-term investments in this promising new business model. But measuring their success by counting the number of participants instead of the sales generated by co-created products or services also illustrates the companies' motive for launching such initiatives, namely to establish long-term relationships with external stakeholders instead of "exploiting" them.

5. Discussion

In this paper, we report the findings of three in-depth case studies of well-known, established companies that have successfully extended their traditional business models by introducing novel tools, instruments and procedures to systematically and continuously integrate users into their core business processes. Specifically, we shed light on success factors for attracting and engaging users in core business processes, and on effective strategies to overcome internal resistance when established companies introduce user-centric business models.

In summary, our results indicate that an appropriate social software design is an important factor in the successful implementation of user-centric business models. Enabling users to interact with each other in real time in order to exchange and discuss ideas or to provide feedback and support is a vital prerequisite for fostering creativity during ideation processes. In addition, information and communication technologies are important for establishing long-term relationships and continuous interaction cycles between the company and its users. These findings confirm prior work by Füller (2010) on principles for designing user-producer co-creation interactions. Furthermore, our study reveals that social software is also crucial to align the users' contributions to corporate strategy and thus to turn user creativity into concrete benefits for the company. With respect to the successful implementation of user-centric business models our findings show that social software needs to be complemented

with other measures such as a transparent IP policy, proper incentive systems, evolutional learning and nurturing, as well as employee empowerment.

By identifying factors for the successful implementation of user-centric business models within established companies, we make a contribution to both theory and practice: First, we provide some anecdotal evidence for the high potential of IT-based user-centric business models as a source of sustainable economic advantage, even for established companies. Our examination of these three cases reveals the high importance of continuous user integration not only in the phase of generating novel ideas, but also at later stages in the commercialization process (such as the evaluation and exploitation phases). However, deriving benefits from recent advances in information and communication technologies by employing user-centric business models and integrating users into corporate activities such as new product development calls for a new logic in a company's core business processes. As a result, researchers and practitioners alike have raised the question of how to design corporate business models in such a way that they allow the successful integration of users into the company's core business processes (e.g. Chesbrough, 2010; Teece, 2010). So far, only little is known about success factors for attracting and engaging users in core business processes and about effective strategies to overcome internal resistance when established companies introduce user-centric business models. Therefore, one major contribution of this paper is the identification of such factors and strategies.

Another contribution to theory is the application of a business model perspective on user innovation and co-creation that enriches our understanding of these phenomena in two different ways: On the one hand, thinking about user innovation as a substitute for in-house core business processes emphasizes the need to establish long-term relationships with company-external individuals such as users. So far, user innovation approaches have been regarded more as singular or temporary collaborations rather than ongoing activities. For example, literature on the lead user method (Lilien et al., 2002) does not address the issue of establishing long-term relationships between the company and lead users. Instead, lead user approaches are usually described as projects which are implemented outside of corporate routines and core business processes and not conducted on a regular basis. The same is true of

the literature on toolkits for user innovation and design. Toolkits are usually defined as user-friendly online tools which allow individuals to design customized products based on their individual needs. The underlying perspective is that of a dyadic human-toolkit interaction which starts with designing the product and ends with placing an order (Franke et al., 2008; von Hippel und Katz, 2002; von Hippel, 2005). However, our three case studies point to the value of established, long-lasting relationships between the company and the users as well as among the users themselves. On the other hand, looking at user integration from a business model perspective reveals that the predominant view of users – that is, primarily as a "source of good ideas" – is insufficient. In each of our three case companies, users are asked to participate not only in ideation processes, but also in the evaluation and exploitation of new business opportunities based on user-generated ideas. The existing user entrepreneurship programs at our case companies underline the high importance of user support during later phases of the commercialization process. This finding reflects the importance of the emerging phenomenon of user entrepreneurship and user manufacturing. Some research has been conducted on these topics, providing anecdotal evidence on the willingness and ability of users to diffuse and commercialize their innovative ideas (Hienerth and Lettl, 2010; Shah and Tripsas, 2005 and 2007).

Thinking about users as contributors along the entire value chain provides another valuable insight: Our findings show that the type of collaboration between the company and its users changes over the different phases of the innovation process. During the ideation phase, the three case companies use an approach similar to what is usually referred to as an "innovation community" (see Pisano and Verganti, 2008). In this mode of collaboration, anybody can participate and submit problems, offer solutions and decide which solutions to use. However, as soon as it comes to pursuing the most promising ideas and developing specific concepts or prototypes, only selected users are invited to contribute further. This collaboration mode is similar in nature to the idea of "elite circles" (Pisano and Verganti, 2008). Thus, one very important implication of our research is the insight that collaboration modes are not stable across all activities associated with the integration of users into core business processes.

Instead, these modes might be dependent on the specific phases of the commercialization process in which the users provide support.

Besides these implications for theory, we also aim to support managers of established companies wishing to harness the creative potential of their users. First, we provide insights into how companies can successfully attract and engage users in their core business processes. Of course, redesigning a company's business model – like any organizational change process – remains an iterative process of trial-and-error learning that cannot be planned in detail ex ante (McGrath, 2010). However, knowing such success factors increases the likelihood that user-centric value creation will be sustainable. Second, we also offer specific recommendations on how to encourage the acceptance and implementation of user integration within the company. Most of the strategies presented here address the "not invented here" syndrome (Katz and Allen, 1982), which was a major barrier to the implementation of user-centric business models at our three case companies. This is not particularly surprising, as this syndrome is well known as a hindrance to the implementation of open and user innovation strategies (e.g., Huston and Sakkab, 2006). In this context, our paper makes a significant contribution by proposing effective hands-on strategies for managing resistance to the integration of users into core business processes. Here one finding was particularly surprising: all three case companies applied "soft" measures instead of "hard" financial measures to assess the success of the respective user-centric business models. This finding seems somewhat counterintuitive as experience tells that key performance indicators such as monetary value of users' contributions and cost reductions matter once firms integrate users more continuously into core business processes. Our interviews revealed that the companies deliberately resisted from applying "hard" performance measures for the following reason: the initiatives were all in the initial trial phase and thus needed to be sheltered from "hard" measures in order to nurture them.

6. Conclusion: Limitations and further research

In our empirical study, we investigated three companies which have successfully complemented their traditional business models by integrating users into their core business processes. Given the complexity of our field of interest, we took an interdisciplinary perspective on this phenomenon by drawing on the fields of strategic management, entrepreneurship, innovation management, organization design, management information systems, and marketing. In order to generate a valid picture of the phenomenon, we opted for a multi-informant research design involving a broad range of heterogeneous interviewees within the three case companies (members of top and the middle management as well as employees, all from different corporate departments, including R&D, marketing, controlling, IT, HR) and from outside the company (users, customers, and consumers). In addition, we chose a longitudinal research design in order to capture the dynamics of the process of implementing user-centric business models.

However, this study is not without its limitations, which stem from methodological aspects of case study analysis as well as the transferability of results to other cases and industries. As the case study method is used to study new research areas in an exploratory manner, it has been criticized as an insufficient basis for scientific generalization (Chetty, 1996). Limitations can also arise due to a lack of comparability where only small numbers of cases are analyzed (Perry, 1998). As explained above, we have tried to reduce such limitations in this study by choosing a large number and variety of interviewees and different data sources in each case. By interviewing multiple respondents, we were able to include various points of view in all three cases. Taking these measures and studying companies in three different industries represents an effort to enhance the internal validity of the results. With regard to limitations of generalizability when working with a small number of pioneering cases, we reviewedthe existing literature on change processes and found interesting parallels to our cases that allow for a more general interpretation of our findings and thus a positive indication of external validity: On a generic level, our findings regarding effective implementation strategies for user-centric business models confirm insights from the field of change management, e.g. Kotter (1996), emphasizing the importance of planning and creating short-term wins

(corresponding to Strategies 1 and 2), empowering employees (corresponding to Strategy 4), and creating and operationalizing the vision (corresponding to Strategies 3 and 5).

This article has shown that companies in different industries exhibit similarities as well as differences when making the transition to more user-centric business models. An in-depth study of additional industries would be required in order to control for situational aspects and various industry-specific characteristics. Further research is also required in order to track the later development of user-centric business models as described in this paper. Due to the novelty of the phenomenon, which is just beginning to attract attention in research and business practice, our observation period ends soon after the implementation of a user-centric business model. What has remained outside our focus is the long-term success factors in managing such business models. Furthermore, comparing successful implementations of user-centric business models (as presented within this paper) with cases of failure could yield additional insights which would serve to enrich our initial findings. There is also a need for more detailed quantitative studies on success factors with regard to specific features of user-centric business models. For example, how do innovation contests for users need to be designed in order to maximize specific outputs (idea quality, commercial attractiveness of new products, etc.)? How can (market) data collected via user-centric platforms (e.g. the social network position of specific users) be used to increase the efficiency and effectiveness of new product development (e.g. identification of lead users)? What about the competitive dynamics of user-centric business models – for example, is there isomorphism toward user-centric business models in the sense that a pioneering firm starts with the implementation of this type of business model in an industry and creates pressure on competitors to apply such models as well? These questions are just a few examples of the numerous research topics that would be well worth pursuing in order to better understand the nature of user-centric business models and the processes of implementing them.

References

Amit, R. &Zott, C. 2001. 'Value creation in E-business.' *Strategic Management Journal,* 22:6-7, 493-520.

Baldwin, C., Hienerth, C. & von Hippel, E. 2006. 'How user innovations become commercial products: A theoretical investigation and case study.' *Research Policy,* 35:9, 1291-313.

Bogers, M., Afuah, A. & Bastian, B. 2010. 'Users as Innovators: A Review, Critique, and Future Research Directions.' *Journal of Management,* 36:4, 857-75.

Chesbrough, H. 2003. *Open Innovation: The New Imperative for Creating and Profiting from Technology.* Cambridge: Harvard Business School Press.

Chesbrough, H. 2006. *Open Business Models: How to Thrive in the New Innovation Landscape.* Cambridge: Harvard Business School Press.

Chesbrough, H. 2010. 'Business Model Innovation: Opportunities and Barriers.' *Long Range Planning,* 43:2-3, 354-63.

Chetty, S. 1996. 'The Case Study Method for Research in Small- and Medium-sized Firms.' *International Small Business Journal*, 15:1, 73-85.

Christensen, C. M. 2006. 'The Ongoing Process of Building a Theory of Disruption.' *Journal of Product Innovation Management,* 23:1, 39-55.

Christensen, C. M. &Raynor, M. E. 2003.*The Innovator's Solution - Creating and Sustaining Successful Growth.*Cambridge: Harvard Business School Press.

Cohen, W. M. &Levinthal, D. A. 1990. 'Absorptive Capacity: A New Perspective on Learning and Innovation.' *Administrative Science Quarterly,* 35, 128-52.

Coloplast, 2010. 'www.coloplast.com.'

Cummings, T. G. & Worley, C. G. 2008. *Organization Development & Change.*Mason: South-Western Cengage Learning.

DeMonaco, H. J., Ayfer, A. & von Hippel, E. 2006. 'The Role of Clinicians in the Discovery of Off-Label Drug Therapies.' *Pharmacotherapy,* 26:3, 323-32.

Di Gangi, P.M. &Wasko, M. 2009. 'Steal my Idea: User Innovation Community Influence on Organizational Adoption of User Innovations: A Case Study of Dell IdeaStorm.' *Decision Support Systems* 48, 303-312.

Eisenhardt, K. M. 1989. 'Building Theories from Case Study Research.' *Academy of Management Review,* 14:4, 532-50.

Faray, S., Jarvenpaa, S. L. &Majchrzak, A. 2010. 'Knowledge Collaboration in Online Communities.' Working Paper.

Franke, N., Keinz, P. & Schreier, M. 2008. 'Complementing Mass Customization Toolkits with User Communities: How Peer Input Improves Customer Self-Design.' *Journal of Product Innovation Management,* 25:6, 546-59.

Franke, N., Keinz, P. & Steger, C. J. 2009. 'Testing the Value of Customization: When Do Customers Really Prefer Products Tailored to Their Preferences?' *Journal of Marketing,* 73:5, 103-21.

Franke, N. &Piller, F. 2004. 'Value Creation by Toolkits for User Innovation and Design: The Case of the Watch Market.' *Journal of Product Innovation Management,* 21:6, 401-15.

Franke, N. &Schreier, M. 2010. 'Why Customers Value Mass-customized Products: The Importance of Process Effort and Enjoyment.' *Journal of Product Innovation Management,* 27:3, 1020-1031.

Franke, N., Schreier, M. & Kaiser, U. 2010. 'The 'I Designed It Myself' Effect in Mass Customization.' *Management Science,* 56:1, 125-40.

Franke, N. & Shah, S. 2003. 'How communities support innovative activities: an exploration of assistance and sharing among end-users.' *Research Policy,* 32:1, 157-78.

Füller, J. 2010. 'Refining Virtual Co-Creation from a Consumer Perspective.'*California Management Review*, 52:2, 98-122.

Füller, J.,Jawecki, G. & Mühlbacher, H. 2006. 'Innovation Creation by Online Basketball Communities.' *Journal of Business Research,* 60:1, 60-71.

Hannan, M. T. & Freeman, J. H. 1984. 'Structural Inertia and Organizational Change.' *American Sociological Review,* 49, 149-64.

Henkel, J. & Jung, S. 2010. 'Identifying Technology Applications Using an Adaption of the Lead-user Approach.' Working Paper.

Herstatt, C. & von Hippel, E. 1992. 'From experience: Developing new product concepts via the lead user method: A case study in a 'low-tech' field.' *Journal of Product Innovation Management,* 9:3, 213-21.

Hienerth, C. 2006. 'The Commercialization of User Innovations: The Development of the Rodeo Kayak Industry.' *R&D Management,* 36:3, 273-94.

Hienerth, C. & Lettl, C. 2011. 'Exploring How Peer Communities Enable Lead User Innovations to Become the Industry Standard: Community pull effects.' *Journal of Product Innovation Management,* forthcoming

Huston, L. &Sakkab, N. 2006. 'Connect and Develop.' *Harvard Business R.,* 84:3, 58-66.

IBM 2010. 'www.ibm.com.'

Jeppesen, L. B. &Frederiksen, L. 2006. 'Why Do Users Contribute to Firm-Hosted User Communities? The Case of Computer-Controlled Music Instruments.' *Org. Sci.,* 17:1, 45-63.

Johnson, M.W., Christensen, C.M. &Kagermann, H. 2008. 'Reinventing Your Business Model.' *Harvard Business Review*, Dec. 2008, 51-59.

Katz, R. & Allen, T. J. 1982. 'Investigating the Not Invented Here (NIH) syndrome: A look at the performance, tenure, and communication patterns of 50 R & D Project Groups.' *R&D Management,* 12:1, 7-20.

Keinz, P. & Prügl, R. 2010. 'A User Community-Based Approach to Leveraging Technological Competences: An Exploratory Case Study of a Technology Start-Up from MIT.' *Creativity and Innovation Management,* 19:3, 269-89.

Kettinger, W. J., Teng, J. T. C. &Guha, S. 1997. 'Business Process Change: A Study of Methodologies, Techniques, and Tools.' *MIS Quarterly,* 21:1, 55-98.

Kotter, J.P. 1996. '*Leading Change.*' Boston: Harvard Business School Press.

Kogut, B. &Metiu, A. 2001. 'Open-Source Software Development and Distributed Innovation.' *Oxford Review of Economic Policy,* 17:2, 248-64.

Krippendorff, K. 2004. *Content Analysis: An Introduction to its Methodology.* Thousand Oaks: Sage.

Laurson, K. & Salter, A. 2006. 'Open for Innovation: The Role of Openness in Explaining Innovation Performance among U.K. Manufacturing Firms.' *Strategic Management Journal*, 27, 131-150.

LEGO 2010. 'www.lego.com.'

Leonard-Barton, D. 1992. 'Core capabilities and core rigidities: A paradox in managing new product development.' *Strategic Management Journal,* 13:S1, 111-25.

Lettl, C., Herstatt, C. &Gemuenden, H. G. 2006.'Users' contributions to radical innovation: evidence from four cases in the field of medical equipment technology.' *R&D Management,* 36:3, 251-72.

Lettl, C., Hienerth, C. &Gemuenden, H. G. 2008. 'Exploring How Lead Users Develop Radical Innovation: Opportunity Recognition and Exploitation in the Field of Medical Equipment Technology.' *IEEE Transactions on Engineering Management,* forthcoming.

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, 1042-59.

McGrath, R. G. 2010. 'Business Models: A Discovery Driven Approach.' *Long Range Planning,* 43:2-3, 247-61.

Miles, M. B. &Huberman, M. 1994. *Qualitative Data Analysis: An Expanded Sourcebook.* Thousand Oaks: Sage.

Perry, C. 1998. 'Processes of a Case Study Methodology for Postgraduate Research in Marketing.' *European Journal of Marketing,* 32:9/10, 785-97.

Pine, B. J., Victor, B. & Boynton, A. C. 1993. 'Making Mass Customization Work.' *Harvard Business Review,* 71:5, 108-18.

Pisano, G. P. &Verganti, R. 2008. 'Which Kind of Collaboration Is Right for You?' *Harvard Business Review,* 86:12, 78-86.

Prahalad, C. K. &Ramaswamy, V. 2004. 'Co-creating unique value with customers.' *Strategy & Leadership,* 32:3, 4-9.

Raymond, E. 1999. 'The cathedral and the bazaar.' *Knowledge, Technology & Policy,* 12:3, 23-49.

Riggs, W. & von Hippel, E. 1994. 'Incentives to innovate and the sources of innovation: the case of scientific instruments.' *Research Policy,* 23:4, 459-69.

Schneider, B., Brief, A. P. &Guzzo, R. A. 1996. 'Creating a Climate and Culture for Sustainable Organizational Change.' *Organizational Dynamics,* 24:4, 6-19.

Shah, S. K. &Tripsas, M. 2005. 'When Do User-Innovators Start Firms? Towards a Theory of User-Entrepreneurship.' Working Paper.

Shah, S. K. &Tripsas, M. 2007. 'The accidental entrepreneur: the emergent and collective process of user entrepreneurship.' *Strategic Entrepreneurship Journal,* 1:1-2, 123-40.

Sosna, M., Trevinyo-Rodríguez, R. N. &Velamuri, S. R. 2010. 'Business Model Innovation through Trial-and-Error Learning: The Naturhouse Case.' *Long Range Planning,* 43:2/3, 383-407.

Souder, W. E. 1989. 'Improving Productivity through Technology Push.' *Research Technology Management,* 32, 19-31.

Teece, D. J. 2010. 'Business Models, Business Strategy and Innovation.' *Long Range Planning,* 43:2-3, 172-94.

Thomke, S. & von Hippel, E. 2002. 'Customers as Innovators: A New Way to Create Value.' *Harvard Business Review,* 80:4, 74-81.

Urban, G. L. & Eric von, H. 1988. 'Lead User Analyses for the Development of New Industrial Products.' *Management Science,* 34:5, 569-82.

vonHippel, E. 1978. 'Successful Industrial Products from Customer Ideas.' *The Journal of Marketing,* 42:1, 39-49.

vonHippel, E. 1988. *The Sources of Innovation.*Oxford, UK.: Oxford University Press.

vonHippel, E. 1998. 'Economics of Product Development by Users: The Impact of 'Sticky' Local Information.' *Management Science,* 44:5, 629-44.

vonHippel, E. 2001. 'Innovation by User Communities: Learning from Open-Source Software. (cover story).' *MIT Sloan Management Review,* 42:4, 82-86.

vonHippel, E. 2005. *Democratizing Innovation.* Cambridge: MIT Press.

von Hippel, E. & Katz, R. 2002. 'Shifting Innovation to Users via Toolkits.' *Management Science,* 48:7, 821-33.

von Krogh, G. & von Hippel, E. 2006. 'The Promise of Research on Open Source Software.' *Management Science,* 52:7, 975-83.

Wirtz, B. W., Schilke, O. &Ullrich, S. 2010. 'Strategic Development of Business Models: Implications of the Web 2.0 for Creating Value on the Internet.' *Long Range Planning,* 43:2-3, 272-90.

Yin, R. K. 2003.*Case Study Research.Design and Methods.*Thousand Oaks: Sage.

Appendix:

I.)   Tables

	Manufacturer-centric business model	User-centric business model
Value proposition	Customers derive value by using a product/service.	Users derive value by using a product/service and by being involved in the core business processes of new product development, production and marketing.
Value creation	Value is created solely by the company and delivered to customers: Business-to-Business (B-B) Business-to-Consumer(B-C)	Value is co-created by the users and the company through interaction: Combination of Business-to-Business and/or Business-to-Consumer with Consumer-to-Consumer (C-C)
Locus of interaction between company and user(s)	Interaction usually only at the end of the value chain, in some cases also earlier in the process (prototype and concept testing)	Repeatedly, anywhere, and at any time in the system
Pattern of interaction between company and user(s)	Passive, firm-initiated, one-on-one	Active, initiated by either firm or user, one-on-one or one-to-many
Goal of interaction	Extraction of economic value	Co-creation of value through compelling co-creation experiences, as well as extraction of economic value
Key processes	Internal R&D, production and marketing	Empowerment of users to participate in the core business processes of new product development, production and marketing
Focus of quality	Quality of internal processes and what the company has to offer	Quality of user-company interaction and co-creation experiences
Key resources	In-house know-how, efficient production systems, controllable sales channels	Intelligence of the crowd and social software to make use of it (toolkits for user innovation and design, user

				communities, online forums, etc.)

Table 1: Characteristics of manufacturer-centric (traditional) and user-centric business models (based on Prahalad and Ramaswamy, 2004)

Case and starting point of userinvolvement	Main theoretical argument for selection (across cases):	Theoretical argument for extension: *Industry and market variation*	Theoretical argument for extension: *Product variation*	Theoretical argument for extension: *Process variation*
LEGO Start of LEGO Factory in 2005. Experience with user involvement since 1998 (Mindstorms).	Established company introducing a user-centric business model	- Toy industry - B2C market	- Play and teaching materials	- Electronic user community with online design toolkit
IBM Regular "Innovation Jams" since 2006 Start of "Jams" in 2001		- Electronics and IT infrastructure industry - B2B market	- Broad variety of IT hardware and software solutions	- Company internal and external innovation projects - Changing topics
Coloplast Start of SIBY in 2008 Experience in participant observatory methods since 1957 and in lead user projects since 2006		- Pharmaceutical and medical industry - B2B and B2C market	- Focus on specific medical equipment and solutions for ostomy care - Limitations due toregulations and standards	- General electronic interaction and support - Supply of physical toolboxes

Table 2: Case overview and theoretical sampling

	2006	2007	2008	2009	2010
Orientation and development of general knowledge about case companies (28 contacts / informal interviews)	First stage	Contact with companies co-creating with users over Danish user-centered innovation Lab and MIT innovation lab (e.g. Coloplast, LEGO, Bang and Olufsen, Danisco, IO Interactive)			
		Joint research project with LEGO on user co-creation funded by Danish Ministry of Industry (EBST)			
		Contact with IBM and joint work on co-creation strategies via IBM think-tank "global innovation outlook"			
Case related interviews	Second Stage		Joint work with Coloplast on lead users and co-creation strategies		
			15 Interviews with LEGO		
				9 Interviews with Coloplast	
					8 Interviews with IBM
Participant observation			Participation in IBM "Innovation Jam" as external experts		
			Participation in Coloplast lead user project		
			Participation in LEGO: three one-week visits on site at LEGO headquarters and R&D department		
Netnography	Third stage		Analysis of content/communication between users from webpages and forums at: LEGO "Factory", Coloplast "stoma innovation by you" and IBM "Innovation Jam"		
Data verification			Analysis of archival sources: yearly reports, internal memos, scientific journals, industry databases, internal documentation of internal workshops and documentation of workshops with users		
					Case reports made available to main interview partners in all three case companies

Table 3: Overview of data collection

Success factor	Similarities	Contrasts/Dissimilarities	Business model elements mainly affected
User-to-user interaction in realtime via online platforms	All three case companies provide online platforms to foster interaction between users.		Value proposition, profit formula
Transparent IP policy	LEGO and Coloplast ask for NDAs from all users in stages subsequent to the ideation phase.	IBM does not ask for waivers in the case of internal jams; they regard employee ideas as corporate property.	Profit formula, key resources
Non-monetary incentive systems	Users are not rewarded with prizes or a salary for participating in corporate business processes.	Coloplast offers consultancy fees to users invited to develop their ideas further.	Value proposition, profit formula
User entrepreneurship support	LEGO and IBM support users who wish to commercialize their ideas themselves.	Coloplast does not proactively offer user entrepreneurship programs due to legal considerations.	Value proposition, profit formula, key processes
Alignment of solution space with the corporate	Contributors are equipped with problem		Key processes

strategy	statements, online tutorials, and (virtual) toolkits in order to moveproblem-solving activities in the intendeddirection.		
Continuous communication and feedback loops	Feedback is given to all contributors on a regular basis.		Value proposition and key processes

Table 4: Similarities and dissimilarities among the business models of the three case companies

Strategy	Description of strategy	Organizational subsystems affected	Barriers addressed
Launch of user integration initiative as an experiment	Introduction of small-scale user integration activities facilitating initial learning and collection of success stories	Internal processes	Psychological ("fear of loss of control") and organizational ("org. inertia")
Collection of success stories	Examples of successful user inputs are presented in order to convince management and employees.	People	Psychological ("not invented here")
Provision of IT environment	Outcome of user integration activities has to be made processable by introducing new IT tools.	IT	Psychological ("not invented here") and organizational ("org. inertia")
Shift of responsibilities and abilities to the employees	Employees have to be involved operationally in user integration activities, thus they require training in order to carry out their new tasks.	Organization and people	Psychological ("loss of control") and organizational ("org. inertia")
Assessment of success using "soft" measures instead of "hard" financial measures atthe beginning of the initiative	User integration activities are evaluated on the basis of gains in reputation rather than monetary measures.	Management and goals	Organizational ("org. inertia")

Table 5: Summary of identified strategies to overcome internal resistance

II.) Questionnaire

Intro:

You have been named to us as an company-internal expert with regard to the [project name]project. Could you please indicate to us how you were involved in planning and setting up this project? What were your responsibilities and tasks?

Apart from you: Who was in charge of planning and implementing the [project name] project?

Background info on the co-creation initiative:

What were the main reasons for [company name] to implement the [project name]?

What were the goals of the implementation of [project name]? Which measures are employed to evaluate the success of the [project name] project?

When did your company comeup with the idea of implementing something like the [project name] for the first time?

How long has [project name] been running by now?

Implementation phase:

Were there any **significant changes** within [company name] associated with the launch of the [project name] project? If yes, which ones?

Recapitulating the whole process from planning to launching the [project name] project: What were the **most important steps** that had to be taken in order to get [project name] running?

Where there any **challenges** the company faced when trying to implement the [project name] project? If yes, could you please explain them in detail?

How did your company resolve these issues?

Was there a champion or team of promoters (power promoter, expert promoter, process promoter) for [project name] project? If yes, what role did these individuals play in the change process?

Has a corporate unit/position (e.g. Vice President) been assigned for the management of [project name] project?

Aspects of special interest in the implementation phase (optional – if not addressed by the interviewee herself)

- Business Processes:

Which business processes (inter-organizational, cross-functional, intra-functional) have been changed by the implementation of [project name]? How did [company name] facilitate this? How have these business process changes been introduced?

How are customers/users/employees integrated into generating and/or evaluating new ideas/innovations?

How does the company secure the input of customers/users/employees? Have any special incentives been introduced for customers/users/employees to participate in the company's innovation processes? Do they get any monetary compensation, for example? Do they get any non-monetary benefits? If yes, please briefly explain the incentives.

How has [company name] addressed IP rights issues?

How are customers/users/employees integrated into the commercialization of new ideas/innovations?

- Corporate Structure:

Which corporate departments/areas have been affected by the implementation of [project name]? How have they been affected?

How did the implementation of [project name] change the company's formal organizational structure? Were any new positions (such as a community managers) introduced atthe company? Did any established positions become obsolete due to the implementation of the [project name] project?

How did the company approach the necessary changes?

- Management:

Was the management system – for example the management style – affected by the implementation of [project name]?

How strong was the top management's support for the [project name] project?

How did the top management promote the [project name] project? Has the [project name] been integrated into the company's strategy, for example?

Did the top management adapt incentive systems in order to foster the [project name] idea? For example, are management bonuses and the employees' compensation at least partly influenced by/based on the success of [project name]? Please comment on any actions taken to secure the commitment for the [project name] project throughout the whole company.

- People:

How did the employees react to the plan of launching [project name]? Was there broad acceptance of the idea from the beginning, or did the management have to convince the employees about the idea? Who had reservations about the [project name] idea and why?

What did the management do in order to convince those people who had reservations about the [project name] project?

How did the implementation of [project name] affect the culture within the company? How did it influence the employees' behavior?

Which activities have been taken by [company name] in order to make the corporate culture more user-oriented?

- Information and Technology:

Which information and communication technology-based tools do you use in order support/run the [project name]? Please comment on these instruments.

To what degree was it necessary to implement new IT and/or to modify existing IT for [project name]?

Output of the project:

From today's perspective: Would you regard [project name] as a success?

What are the most important advantages that [company name] could derive from implementing [project name]? Have there been any positive effects on the NPD process (e.g. innovation output, innovation success rate, time to market, development time, development cost) or the generation of new business areas, production costs, the company's reputation, customer satisfaction, etc.?

Can you give a rough estimate of the costs associated with implementing [project name]?

Finally, could you please comment on the most important success factors in planning and launching the [project name] project? What made the project the success it is?

Closing:

What is your official position within [company name]?

How long have you been working with [company name]?

III.) Interviewees

Code	Name	Company	Function
E1	Dorthe Mathiesen	Danish Technological Institute.	Project Manager
E2	Louise Hvid Jensen	Danish Technological Institute.	Director of Center For Ideas & Growth
E3	John Thesmer	Coloplast	CEO, lctalcare A/S
E4	Per Ole Nielsen	Coloplast	International Project Manager
E5	Peter Kragh	Coloplast	Senior Principal Scientist, Future Innovation Methods
E6	Ingrid Fink	Coloplast	Project Manager, Voice of the Customer
E7	Christopher D. Sorensen	Bang&Olufsen	Innovation Manager
E8	Jannie Friis Kristensen	Bang&Olufsen	Experience Designer
E9	Lise Balstrup	Danisco	Business Development Manager
E10	Signe Orberg	Danisco	Project Manager
E11	Flemming Vang Sparso	Danisco	Project Manager, Patent Holder
E12	Lars Hofmann Christensen	Novo Nordisk	Project Manager, Patent Holder
E13	Arne Stjernholm Madsen	Novo Nordisk	Innovation Manager
E14	Bo Wesley	Novo Nordisk	Senior Advisor
E15	Hans Ulrich Maerki	IBM	Chairman, IBM Europe, Middle East and Africa
E16	Richard Straub	IBM	Advisor to the Chairman, IBM Europe, Middle East and Africa
E17	Andreas Neus	IBM	Media&Entertainment, Industry Lead
E18	John Mihalec	IBM	Vice President, Corporate Affairs Europe
E19	David R. Yaun	IBM	Vice President, Marketing and Communications
E20	Kim Ostrup	IBM	President of IBM Denmark
E21	Tormod Askildsen	LEGO	Head of LEGO Communities
E22	Paal Smith-Meyer	LEGO	Head of New Business Group
E23	Mark W. Hansen	LEGO	Director of Business Development
E24	Thomas Howalt	IO Interactive	Business Development Manager
C1	Hendrik Lorensen	LEGO	Vice President of Digital Services
C2	Paal Smith-Meyer	LEGO	Head of New Business Group
C3	Helene Venge	LEGO	Head of Sales and Marketing for LEGO Factory
C4	Helle Borup Fridberg	LEGO	Director of Business Development
C5	Fraser Lovatt	LEGO	Director of Online Communication
C6	Tormod Askildsen	LEGO	Head of LEGO Communities
C7	Jai Mukherjee	LEGO	Director of New Business Group
C8	Jeppe Olander Vangsted	LEGO	Project Manager, LEGO Mindstorms
C9	Mark W. Hansen	LEGO	Director of Business Development
C10	Hanne T. Odegaard	LEGO	Director of Customization
C11	Joe Meno	LEGO	Lead User
C12	Robin Sather	LEGO	Lead User
C13	Will Chapman	LEGO	Lead User
C14	Marcos Wesely	LEGO	Lead User

C15	Tommy Armstrong	LEGO	Lead User
C16	Peter Kragh	Coloplast	Senior Principal Scientist, Future Innovation Methods
C17	Lene Heegaard	Coloplast	Director of Co-Creation
C18	John Raabo Nielsen	Coloplast	Senior Vice President, Global R&D
C19	Bert Steur	Coloplast	SIBY Website administrator
C20	Sandra Walder	Coloplast	SIBY project team
C21	Per Ole Nielsen	Coloplast	International Project Manager
C22	Ingrid Fink	Coloplast	Project Manager, Voice of the Customer
C23	L. Piper	Coloplast	Lead User
C24	Adrian H. Davis	Coloplast	Lead User
C25	Liam Cleaver	IBM	Program Director, Open and Collaborative Innovation
C26	Wenzel-Haberstock	IBM	Innovation Leader, Business Enablement, IBM Germany
C27	Erich Ruetsche	IBM	Business Development and Relations, IBM Zurich Research Laboratory
C28	Kristine Lawas	IBM	Senior Management, Online Collaboration
C29	Andreas Neus	IBM	Media&Entertainment, Industry Lead
C30	David R. Yaun	IBM	Vice President, Marketing and Communications
C31	Tanja Reiter	IBM	Lead User
C32	Helmut Ludwar	IBM	Lead User

E = Expert interviews / first-stage interviews
C = Case interviews / second-stage interviews
All interviews performed in 2007, 2008, 2009 and 2010

IV.) Categories and Codes

Main categories	Sub-Categories	Topic/Strategy	Codes
SuccessFactor		User-to-user interaction in real time via online platforms	• Vivid discussions between users (precondition for high quality ideas) • Large number of people with different backgrounds interacting with each other • Expert users are invited to join groups (improving idea quality) • Users are picked to continue working on the idea with company-internal individuals
		Transparent IP policy	• Free, unlimited idea interaction and development • Signing of NDAs and IP rights transfer forms (for developing concrete concepts) • Company owns IP generated by employees • Generating a sense of community by leaving idea "rights" to users • Ideas not ready for patenting
		Non-monetaryincentivesystems	• No monetary remuneration of users • "Special status" reward • Motivation by participation in further development • Participation in commercialization process • Most valuable contributors mentioned and named to the community • Opportunity to work with the company
		User entrepreneurshipsupport	• Users allowed to commercialize their ideas on their own • Users supported (by allowing them to sell their modifications under the corporate brand) • Provision of legal and financial support to contributors • Co-marketing concepts for user entrepreneurs • Low purchase prices on components for users
		Alignment of solution space with the corporate strategy	• Activities within the community aligned with the interests of the company • Company provides topics of special interest • Competitions are held (in order to direct the community's attention to a certain problem) • Off-topic innovations are not immediately followed, but collected (for later analysis) • Off-topic discussions are discouraged • Users get basic information upfront on the problem to be solved • Users are provided with a set of rules on how to interact with each other • Users are equipped with online/real toolkits (to enable experimental invention (trial and error learning)
		Continuous communication	• Giving feedback to the community (as a precondition for continuous support)

		and feedback loops	- Decrease in participation (where feedback is lacking) - Summarizing core ideas and naming the most valuable contributors (enhancing willingness to contribute among users) - Persons (employees) appointed to give feedback to the community
Strategy			
	Internal processes	Launch of user integration initiative as an experiment	- Initiative started as small project (driven by single persons) - Initiative run by enthusiasts alongside their daily work - Low internal financial support, but high interest in the initiative (at the beginning) - Initiative started with little resources - User innovation not officially anchored in the corporate strategy - Lack of clear (financial) goals of the user integration initiatives - No pre-defined ideas of how and where to integrate users (initially) - Top management request for proof of concept
	-"-	Improvement on the basis of evolutional learning	- Improvements of processes and procedures over time - Responsiveness to suggestions from users - Establishment of new interaction modes over time - Replacement of real-life interactions with online interactions
	People	Collection of success stories	- Overcoming internal barriers by presenting high-quality work from users internally - Illustrating the potential of user integration by collecting success stories - Presenting concrete persons rather than abstract ideas or concepts - Collecting existing drawings and ideas in online forums to show the large number of potential innovations - Publishing of the outcomes of initial user integration activities
	Organization and people	Shift of responsibilities and abilities to the employees	- User innovation initiative not managed by a central department/corporate unit - Small teams giving support (to managers who want to involve users in certain projects) - Line managers and staff are educated and trained (in order to be able to integrate users effectively) - User integration handbooks and "manuals" are provided for employees - Line managers holding responsibility for new projects
	IT	Provision of IT environment	- Introduction of online toolkits to track innovative activities - Introduction of online forums to manage and track discussions and ideas - Use of data mining tools to analyze discussions - Use of data mining tools to detect breaches of interaction rules by participants
	Management and goals	Assessment of success using "soft" measures instead of "hard" financial	- Financial targets are not highest priority (in the initial phase) - Goal is to create "buzz" - Goal is to tap into the creative potential of users - Shortening of time to market as important goal

		measures at the beginning of the initiative	• Goal is to get many high quality ideas • Reputation goal I: Company wants to be known as innovative company listening to their most important stakeholders • Reputation goal II: Better perception of company through closer relationship to their user communities

Coding process

The starting categories for identifying codes and strategies to overcome internal resistance and the area of success factors for attracting and engaging users in core business processes were deduced from the framework by Kettinger et al. (1997) and the theory outlined in our literature review section (including the work of Prahalad and Ramswamy, 2004). For the generation of initial codes, the three authors first coded the data independently and then compared and discussed results in a joint session. The research assistants who worked on the cases and conducted a large share of the interviews also carried out the coding process independently. Finally, we conducted a workshop in which we compared the results attained by the authors and research assistants. As interview data are difficult to quantify (in contrast to simple content analysis procedures), we decided not to use quantitative interrater reliability measures (such as Krippendorf's Alpha; Krippendorf, 2004) but reached agreement on the codes and patterns in the workshop conducted. Within the area of success factors, we identified 32 codes, grouped in six topics. In the area of strategies to overcome internal resistance, we identified 33 codes, grouped in 5 strategies. Furthermore, along the coding process we identified 2 areas of preconditions for the interaction with users ("well established brand" and "openness to inputs from outside", based on 5 codes each).