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Value Creation in Business-To-Business Crowd Sourcing

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ABSTRACT

In knowledge society the utilization of social media as a communication channel between people, groups and even companies is increasing. Current innovation and social media research has already shown the potential of crowdsourcing in the business-to-consumer (B2C) markets. The authors argue in this paper, however, that crowdsourcing has a great and yet partly undiscovered potential also in the context of business-to-business (B2B) markets. In order to get the full potential, a more detailed understanding of the logic of value creation in crowdsourcing activities between multiple stakeholders in B2B context is needed. This paper presents an exploratory study that is carried out as an empirical netnography-based multiple case study. The study opens up potential future research avenues by starting the discussion of value creation logic in B2B crowdsourcing. Practical implications are created through cases revealing what kind of value companies have already been able to gain from crowdsourcing in B2B context.

Keywords: *business-to-business relationships, business to consumer, Crowd Sourcing, markets, value creation, value functions*

INTRODUCTION

The increasingly important managerial paradigm, “open innovation”, emphasizes the importance of the efficient use of all available resources, knowledge and information. Besides the resources and knowledge inside the company borders, it emphasizes the significance of utilizing particularly the resources and knowledge residing outside the company borders. This is because valuable innovation-related knowledge is being increasingly widely distributed to different actors, organizations (e.g. companies,

customers, suppliers, universities etc.) and communities.

Crowdsourcing (Howe, 2008) is relatively novel, but increasingly important ways to involve customers, end users and their expertise and knowledge in innovation. Crowdsourcing can be broadly defined, according to Howe (2008) as an “act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call”. Crowdsourcing can be utilized for instance to identify new business opportunities

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and new product ideas, to deepen relationships with consumers and customers, and to enhance collaboration not only inside but also between companies and other parties (Burmahn, 2010; Chesborough, 2011; Whitla, 2009). However, in order to achieve novel, but useful ways of working together in business-to-business (B2B) relationships, companies should understand carefully the value created in crowdsourcing activities from different perspectives of engaged actors, such as direct customers and suppliers. According to Gillin and Schwartzman (2011) the best operating B2B relationships are symbiotic in terms of e.g. mutual engagements and alignment, which are rooted by aspiration, needs, and challenges of both parties. We also highlight the role of social media in creating new potential for crowdsourcing: crowdsourcing can be carried out in many ways, but nevertheless crowdsourcing has gained novel interest due to new possibilities and value creation options created by various approaches provided by the social media.

The current lack of organized and analyzed case evidence and examples for companies operating in B2B markets, and developing products for other companies in particular, makes it difficult for managers to estimate the possibilities of crowdsourcing in B2B relationships. Some characteristics of the B2B sector, such as B2B's having typically far fewer customers than business-to-consumer's (B2C's) (Gillin & Schwartzman, 2011; Geehan, 2011), often make it difficult to locate sufficiently large crowds of customers for crowdsourcing purposes. Due to the differences between B2B and B2C markets, the currently available academic studies that almost merely present crowdsourcing examples and analysis results from companies operating fully or mainly in B2C markets, are useful as examples only in a limited way to B2B markets and relationships.

Based on earlier studies (Jussila et al., 2012; Kärkkäinen et al., 2011; Kärkkäinen et al., 2012; Simula & Vuori, 2012) we argue, however, that there is a great potential related to crowdsourcing use in the context of B2B markets and relationships. In order to get

the full potential, there is a need for a more detailed understanding of the logic of value creation in crowdsourcing activities between multiple stakeholders in business-to-business context. We argue that crowdsourcing-related value creating networks can be better designed to provide significant value for the suppliers, customers and other network members on the basis of increased understanding of crowdsourcing-related value creation.

In the recent marketing literature, the conceptualization of value has divided to two differentiated main streams: the other deals with the value of products and services, while the other focuses on the value of buyer-seller relationships (Lindgreen & Wynstra, 2005). Our perspective of value creation is based on the latter stream as we utilize the function viewpoint presented by Walter et al. (2001) as an analysis tool for the value creation. We are particularly interested to analyze the value the supplier company gets from crowdsourcing, not so much to the motivation of the single individuals to participate in the innovation process nor to the value from the customer organization's viewpoint, which is already more covered viewpoint in most of the recent value creation analyses (see e.g. Möller & Törrönen, 2003).

Thus, the goal of this exploratory study is to understand how crowdsourcing has been used and can be used in business-to-business relationships to create value for the focal supplier company. We will carry out an empirical netnography-based multiple case study, in which we examine crowdsourcing use and value creation in the context of business-to-business relationships. We analyze the empirical data through a theoretical framework that is based on Walter et al.'s (2001) value function analysis framework, which can be used to understand especially the value created by different value functions. The research seeks answers to the following research question: what kind of value is crowdsourcing able to create in B2B relationships in regard to value functions, particularly from supplier's perspective?

The structure of the paper is as following. After the introduction we will define

crowdsourcing and its role in B2B relationships, as well as some of the major challenges related to B2B use of crowdsourcing. We thereafter define our value creation viewpoint, as well as the framework of value functions used in the analysis. These theoretical considerations are then applied in an empirical study, which consists of six different types of crowdsourcing cases in B2B relationships. Before opening up the findings from the empirical study, we introduce our netnography- based research approach. The paper is concluded by discussing the results and the contributions of the study as well as presenting the potential further research avenues.

LITERATURE REVIEW

In this section the essentials of crowdsourcing from the business-to-business viewpoint are firstly discussed. Then the theoretical bases of value creation are shortly opened up and followed by the presentation of the value function framework.

Crowd Sourcing in Business-to-Business Context

In current crowdsourcing literature the crowdsourcing definitions have varied from very specific notions to broad generalist concepts depending on the subjects or the scopes of research projects. To unify the vague group of definitions Estellés-Arolas and González (2012) studied over two hundred documents, related to crowdsourcing, and found 40 different crowdsourcing definitions which they used to form one universal interpretation to act as a theoretical base: "Crowdsourcing is a type of participative online activity in which an individual, an institution, a non-profit organization, or company proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task."

We adopt Penin and Burger-Helmchen's (2011) concept of open call as a call in which everybody can (at least in principle) answer the

call - individuals can participate in addition to restricting the call within firms only, as well as non-profit organizations, or communities of individuals. We will further specify the 'B2B crowdsourcing', drawing from commonly cited crowdsourcing definitions, rather extensively as "companies operating in B2B markets, using crowdsourcing in any way to their business benefit", thus not necessarily the B2B's starting or making the actual crowdsourcing call themselves, or only between companies (as name "business-to-business" might refer). Thus we will follow in this study the generic format of B2B crowdsourcing provided by Kärkkäinen et al. (2011) as "participatory online activity, carried out via an open call, in which companies operating in business-to-business markets propose themselves or aim to benefit in some other way from voluntary provision of A from B in C purpose, benefiting from this in D sense" in which: A = concepts, ideas, information, knowledge, funding or other resources; B = a group of individuals of varying knowledge, heterogeneity and number, consisting from individuals from any companies, organizations, non-profits, intermediaries, communities or individual professionals, C = new product development (NPD), innovation process, marketing, sales, new business development, etc.; and lastly, D = cost reduction, quality increase, increased customer orientation and customer understanding, time-to-market time reduction, sales / profit increase.

The markets, the customers, the products and product development have several differences between the business-to-business and consumer product sectors (Hanna et al., 1995; Von Hippel, 1988; Holt et al., 1984; Geehan, 2011; Urban & Hansen, 1993) that have an effect on utilization of crowdsourcing, too. Firstly, since the amount of customers is generally much smaller in B2B's (Geehan, 2011), the use of crowdsourcing in B2B relationships and in the development of B2B products is quite rare and in many ways more limited, compared to the use in B2C's. Second, in the context of innovations and B2B's, legal contracts and IPR -issues can become challenges in the free

revealing of product or business ideas in the inter-organizational innovation collaboration (Marjanovic et al., 2012; Nordlund et al., 2011) and may thus seriously limit the usability of crowdsourcing between B2B companies and their business customers. Third, concerning closely the theme of value creation, the ways to motivate and engage business customers and partners is very different from motivating and engaging consumers (Tickle et al., 2011) for crowdsourcing purposes.

Due to the above characteristics, the currently available academic studies that almost merely present B2C crowdsourcing examples are useful only in a very limited sense to B2B's. For the same reasons, many companies and managers have serious doubts against the usefulness of crowdsourcing in the B2B sector. Taking the above B2B and B2C differences into consideration, it is fair to presume that also the various types of crowdsourcing approaches, such as the ones that are carried out by means of social media and Web 2.0, should take these differences carefully into account when planning and implementing approaches for the business-to-business sector companies.

Value Creation and Value Functions

In order to analyze the usefulness of an innovation, such as crowdsourcing in business-to-business context can be understood, we need to be able to identify and measure the value created by the utilization of the innovation. However, measurement and even the identification of "value" is not an easy task. This is due to the multifaceted and complex nature of value; it is a concept that is commonly used by both academics and actors in the field, but it is often rather unclear what is actually meant by it in different contexts (Ford & McDowell, 1999; Helander, 2004).

As already stated in the introduction part of this paper, marketing literature has made a division in value discussion to two main streams: the value of products and services, and the value of buyer-seller relationships (Lindgreen

& Wynstra, 2005). In this paper, we will apply the latter one with the chosen viewpoint of value functions (Walter et al., 2001). However, another interesting distinction that has been made within the value creation literature is the division between value creation processes and value outcomes (Gummerus, 2013). When focusing on the value creation process perspective, it is important to understand that the process of value creation will differ based on whether value is created by an individual, an organization, or society (Lepak et al., 2007). In the current study, the first two levels, an individual and an organization are present, as use of social media based crowdsourcing is studied in B2B context (organizational level) but is in the end realized through individuals that participate in the crowdsourcing. Referring to the perspective of value as an outcome, a commonly presented view of value is to understand it as the trade-off between benefits and sacrifices (Lapierre, 2000; Parolini, 1999; Ravalad & Grönroos, 1996; Slater, 1997; Yadav & Berry, 1996) which can be both monetary and non-monetary (Walter et al., 2001). The use of crowdsourcing in B2B context strives mostly for monetary value, as the ultimate objective for companies is to create profit for their owners. Nevertheless, there is also a great non-monetary value potential included in crowdsourcing for companies, such as gaining new ideas, concepts, information, knowledge, or other resources (Kärkkäinen et al., 2012). These kinds of non-monetary values may be in the long run even more important, because in the end, they may create the biggest value and turn also into direct monetary value e.g. in the form of new market areas, new product/service innovations or even as the key enabler of company growth.

Walter et al. (2001) have conceptualized value creation as a set of direct and indirect functions of customer relationships from the supplier's perspective. Direct functions bring value that is easier to measure financially and to realize in the relationship between the company and its relationship party, e.g. the customer or the supplier. Indirect functions, on the other hand, also include the third parties, and the outcomes

are not as straightforward to measure financially. The functions of a customer relationship refer to performed activities and employed resources of the customer that the customer is contributing to the relationship and as such also to the wider network (Walter et al., 2001).

The value functions introduced by Walter et al. (2001) introduced are the following:

Direct-Value Functions

- **Profit Function:** Refers to the profit gained from selling product(s) to a customer.
- **Volume Function:** Refers to selling volume of products to customers, which help to exceed necessary minimum utilization of the supplier's capacities.
- **Safeguard Function:** Refers to the possibility of 'guaranteeing' a level of business that serve as insurance against crises or difficulties with other customers.

Indirect-Value Functions

- **Innovation Function:** Refers to the possibility of product and process innovation with a particular customer.
- **Market Function:** Refers to the possibility of acquiring information about potential new customers, initiation of contacts with new customers and receiving referrals and/or recommendations to potential new customers from a particular customer.
- **Scout Function:** Refers to the market, competitor and other information that can be acquired through a particular customer.
- **Access Function:** Refers to gaining access to relevant other actors through a particular customer.

The direct and indirect value functions have been used either completely or in part for example to study the impact of information technology deployment on trust, commitment and value creation in business relationships (Ryssel et al., 2004), information technology competence and value creation in supplier-customer relationships (Walter & Ritter, 2005), and the practices

and functions of customer reference marketing (Jalkala & Salminen, 2010). We found no previous studies that have studied value functions in the context of B2B crowdsourcing.

EMPIRICAL STUDY

In this section we will firstly present the research methods and the case selection, and then discuss the findings from the empirical study.

Research Approach

We applied netnographic research principles, designed for studying online communities (Kozinets, 2002), on the observation of textual discourse in selected social media-based crowdsourcing platforms, and the media (platforms) themselves related to our research goal. The subject area of observation of textual discourse was specifically value creation functions and the role of social media in crowdsourcing in B2B customer relationships, and the media studied were the identified and selected crowdsourcing platforms, where the conversation that produced the studied textual discourses took place.

Netnography was chosen as a research method as it is specifically designed for online community studies (Kozinets, 2002). Netnography is a qualitative, interpretative research approach that adapts the traditional, in-person ethnographic research techniques of anthropology to the study of online communities and cultures created through computer-mediated social interaction (Bowler, 2010; Jupp, 2006; Kozinets, 2011; Kozinets, 2002; Kozinets, 1998). Netnography extends the traditional notion of field and ethnographic study, as well as ethnographic cultural analysis and representation, from the observation of co-located, face-to-face interactions to technologically mediated interactions in online networks and communities, and the culture shared between and among them (Bowler, 2010; Kozinets, 2010). However, netnography as a research method is simpler, faster and timelier than traditional ethnography, and it is also more naturalistic and unobtrusive than for example surveys or interviews (Kozinets,

1998). Netnography provides procedures for participant observation in the online environment, that include investigating appropriate online communities for a study, and entering the online community and culture; collecting and analysing the data; ensuring trustworthy interpretations; conducting ethical research; and providing opportunities for the feedback of community members (Bowler, 2010; Jupp, 2006; Kozinets, 2011; Kozinets, 2002; Kozinets, 1998).

According to Kozinets (2010) the simplified flow of a netnographic research project includes the following five steps: 1) definition of research questions, social sites or topics to investigate; 2) community identification and selection, 3) community participant-observation and data collection (ensure ethical procedures); 4) data analysis and iterative interpretation of findings; 5) write, present and report findings and/or theoretical and/or policy indications. These steps were also followed in the present study. Firstly, we formulated our research questions and identified suitable crowdsourcing platforms that can be studied from B2B supplier perspective. Secondly, to collect data and to sample related crowdsourcing platforms with the specific subject area (cf. Rokka, 2010), a participant observation (Lewis et al., 2009) was used as a part of our netnographic approach to identify the concrete company cases of supplier crowdsourcing in B2B context. The observation included registrations to several online

crowdsourcing platforms, browsing through the available textual discourses, and identifying, observing and analyzing the role of social media and the value functions of crowdsourcing in customer relationships from the supplier's perspective. The approach included also following various links to secondary sources (e.g. company websites and online discussion forums) in order to gain comprehensive knowledge about the crowdsourcing platforms. During the observation we adapted Gill and Johnson's (2002) role of "complete observer" with some characteristics from "observer as participant", as we did not take part in the actual crowdsourcing tasks, but did not deliberately hide our presence on the platforms, either.

The studied supplier's utilizing these six crowdsourcing platforms in value creation in B2B customer relationships were Intuit, SAP, Formlabs, Dell, Bombardier and Lürssen Werft (See Table 1).

The gathered observation data was interpreted by following content analysis principles and the results of the empirical study are presented in the following section.

Results of the Empirical Study

In this section, the empirical results concerning value functions of crowdsourcing within the selected cases are discussed. Firstly key results of each of the cases is opened up and in the end of the section the results are summarized

Table 1. Selected cases representing social media-based online crowdsourcing platforms

Company and Social Media-Based Online Crowdsourcing Platform	The Observed B2B Product Related to Customer-Supplier Relationship	Industry
Intuit TurboTax Live Community	TurboTax for Business tax software	Software and professional services
Formlabs Kickstarter	3D printer	Manufacturing
Dell IdeaStorm platform	Developer laptop	Computer hardware
SAP Community Network	Enterprise resource planning software	Software (B2B)
Bombardier YouRail	Interior design for trains	Rail-equipment manufacturing
Lürssen Werft GrabCAD	Dampening device for wind breaker doors	Shipbuilding

through each value function according to the model of Walter et al. (2001).

Firstly, in the case of Intuit the *profit* function played a key role. In Intuit, the integration of social media based customer support crowdsourcing platform Live Community into TurboTax software product not only enabled reduced costs of customer support (Hinchcliffe & Kim, 2012), but also enabled the company to *scout* tax knowledge of its customers in terms of providing answers to questions posed by the community. Furthermore, by providing the customer a tool to crowdsource solutions to their tax problems, Intuit was able to *safeguard* its business by retaining customer relationships and preventing product abandonment. The crowdsourcing platform and the new way of doing customer support can also be considered as a process *innovation* reducing e.g. the need for increasing staffing in traditional telephone and email –based customer support. In Intuit TurboTax Live Community communicating through social media had significant role in value creation in terms of scouting tax information from customers. For example the TurboTax for Business had 219 answered questions about income-related issues in the Live Community. Not only asking questions, but answering and completing others answers on the problems was enabled by the social media -based platform. Completing in terms of commenting, giving helpful votes to answers and subscribing to updates are valuable social media roles for scouting relevant tax information from the supplier's perspective.

In the case of Formlabs, the Kickstarter crowdsourcing platform specialized in crowdfunding enabled the supplier of 3D printers to ensure necessary *volume* of orders and funding from customers in order to set up full-scale manufacturing. The go-ahead decision for the supplier to setup full-scale manufacturing was based on threshold of \$100,000 funding from customers (Kickstarter, 2012). From the supplier's perspective the role of crowdsourcing was to enable both *volume* and *safeguard* value functions at the same time in the customer relationships. Furthermore, in the Formlabs

case the new kind of communication channel enabled by social media played the most important part in crowdsourcing funding from the Kickstarter platform. The platform enabled to communicate the funding project to a wide audience (e.g. more than 600 000 followers in Twitter) and to observe in realtime how much funding and related product orders were placed by the customers (Kickstarter, 2012).

In Dell's case the *innovation* function was the primary value function in crowdsourcing; through their Dell IdeaStorm crowdsourcing platform, they received a great number of innovative product and process ideas of which a rather large amount has already been implemented (Dell, 2012). Related to the observed Storm Session event organized in IdeaStorm platform Dell received 153 product development ideas from direct customers. Furthermore, in the Dell case, the *scout* function was also significant when crowdsourcing the customer needs and requirements for the developer laptop. As a supplier of computer hardware and software Dell received 88 well documented needs of the customers, some which were commented by other customers, and also rated. For Dell the connecting role of social media provided an opportunity to learn more from potential customers and also as means to contact the contributors in further phases of the development of the product.

In the case of SAP through the *scout* function was enabled huge amount of contributions to knowledge base of SAP Community Network, SAP receiving more than 100 000 contributions to knowledge base by community members including customers, end-users, and partners (SAP, 2013; Yolton, 2011). For SAP, the communication possibilities offered by social media had significant role in creating value by scouting the market, and product knowledge of SAP's customers, end-users and partners. Social media played also a key role in the creating value by more easier and faster *access* to finding the right experts for a given business situation.

Similarly in Bombardier's and Lürssen Werft's case the role of crowdsourcing was primarily to create value through *innovation*

function. Bombardier received 4298 new interior design concepts for product innovation to their innovation competition in YouRail crowdsourcing platform (Bombardier, 2012; Haller et al., 2011) and Lürssen Werft received 62 models for product innovation of windbreaker doors in challenge organized in GrabCAD intermediary crowdsourcing platform together with GrabCAD experts (GrapCAD, 2012). Through GrabCAD Lürssen Werft was able to communicate the product innovation challenge to more than 500 000 mechanical engineers in the GrabCAD community, all potential supplier's for the company. The 62 models submitted by the engineers, received a number of comments and likes from the community to support decision making of ideas. Social media was also used to combine content, e.g. from YouTube, to more clearly illustrate the function of product innovation ideas and models for the supplier. For Bombardier, social media can be seen to have a valuable role on both to the quality of the crowdsourced concepts and for the evaluation of the crowdsourced concepts. Commenting of the concepts for new interior designs for trains was active, with a total of 8582 comments received to 4298 designs. Even more active was the rating of the concepts, Bombardier having received 26617 ratings to the concepts helping the jury to evaluate the winning designs.

The Table 2 that illustrates crowdsourcing value functions is by no means exhaustive, but rather aims to point out few examples of each value function by case examples. It is noteworthy, that by utilizing crowdsourcing business-to-business companies have been able to create value simultaneously by several direct and indirect value functions.

DISCUSSION

We were able to find a number of different types of interesting and useful applications of crowdsourcing in a large variety of different application areas in B2B relationships, which demonstrate the usability of crowdsourcing in the very scarcely studied and understood context of business-to-business sector. In general,

the tasks that the studied B2B suppliers had crowdsourced were quite complex, which, much in contrast to common B2C crowdsourcing tasks, were very demanding in regards to the needed variety and depth of competences (e.g. mechanical engineering expertise in Lürssen Werft case).

When answering our research question, what kind of value is crowdsourcing able to create in B2B customer relationships from supplier's perspective, our explorative study showed that the suppliers of B2B's that were involved in crowdsourcing activities have been able to make use of crowdsourcing in many ways in creating value in their B2B business interrelationships. The analysis (see Table 2) demonstrated that in the discovered B2B crowdsourcing approaches we found impacts to both all the direct value functions as well as all indirect value functions. The studied crowdsourcing platforms and related crowdsourcing approaches have been used to create value for the focal crowdsourcing supplier simultaneously by several direct and indirect value functions. For example, in the case of Intuit, the company was able to innovate its customer support process by enabling the customers to crowdsource tax advice from each other. Crowdsourcing lead to several benefits for Intuit that were related to direct and indirect value functions. The direct value functions of crowdsourcing included profit in terms of increased profits from product and service offerings, and safeguards in terms of avoiding product abandonment and retaining customer relationships. The indirect value functions of crowdsourcing included scout function, in terms of receiving tax knowledge from customers, and innovation in terms of process innovation of customer support, that also reduces the amount of traditional support needed.

CONCLUSION

This study explored value creation logic of crowdsourcing in B2B relationships. Based on our study we can conclude that the benefits of crowdsourcing in the context of B2B relation-

Table 2. Case examples of crowdsourcing value functions from supplier perspective

Value Function	Description of the Function	Case Example of Received Supplier Value
DIRECT		
Profit	The financial value of profits a relationship generates	Intuit TurboTax biggest increases in sales taking place after the launch of Live Community, which in part indicates the benefits of social media based customer support crowdsourcing platform in increasing profit of TurboTax product.
Volume	Relationships guaranteeing a certain operating volume	Formlabs achieved its volume goals for production of different price category 3D printer kits and for minimum required funding (\$100,000) from customers, e.g. \$2,299 for basic 3D printer kit and \$8,000 for personalized kit.
Safeguard	Reliability and continuity of a relationship	Intuit used the customer support crowdsourcing platform to safeguard its business and to prevent product abandonment by proving platform for the customers to ask questions and receive replies from Intuit or other customers as needed.
INDIRECT		
Innovation	Creating innovative development ideas through relationships	<ul style="list-style-type: none"> • Dell received 153 product development ideas from direct customers to their developer laptop in directed Storm Session event organized in IdeaStorm platform lasting from May 6 – Sep 16 2012. • Bombardier received 4298 designs and also 26617 ratings and 8582 comments on competing submissions in their innovation competition organized in YouRail crowdsourcing platform. • Lürssen Werft received 62 models (STEP files or AutoCAD compatible drawings) for new dampening device for wind breaker doors for large mega yachts in challenge organized in GrabCAD crowdsourcing platform in approximately one month.
Market	Accessing new areas and getting contacts to new partners through existing relationships	SAP gained information about potential new customers from SAP Community Network; more than 100 000 individuals joined the SAP Community Network with the first two years, and eight years after its founding the network consists of over 2.5 million registered users (including customers, prospects, partners and independent experts); with 1.5 million unique visitors / month.
Scout	Creating value through information	Intuit tapped into its customers tax knowledge by integrating customer support crowdsourcing platform Live Community into its TurboTax product, enabling users to solve users problems that often were more knowledgeable than company's own agents; for example the TurboTax for Business has 219 answered questions about income-related issues, 412 answered questions about deductions and 142 answered questions about balance sheet.
Access	Creating value through partner contacts	SAP has used an internal people finder application that takes advantage of social analytics aimed at both external social media and internal tools to find the right expert for a given business situation, thus making it possible to crowdsource contacts to important persons

ships are evident. Value is created through the more easily measured direct functions, but what is notable, especially through the more indirect functions, such as innovation or market function. This dominance of indirect value functions may in part explain why to this date the value

of crowdsourcing in B2B context has not yet been realized enough well among companies. In general, indirect value is something that is hardly measurable or even identifiable, and thus this kind of value and benefits are not usually as visible as the direct functions are. However,

due to the netnographic research approach and observation methods of the current study, we were able to identify especially the indirect value created by crowdsourcing in B2B relationships.

On the other hand, partly due to the selected methodology of netnographic observation, first, we were not able to make conclusive observations about potential value creation trade-offs, sacrifices or negative impacts to value creation, but some preliminary potential negative impacts to sustainable value that we came up with in the analysis included for instance that in certain cases, competitors may gain the same information and use it in their own product development and business development. Since the central aims of our study did not focus on the negative impacts of social media, we will leave this analysis to be done in the future research. Second, we could not directly observe the direct value function impacts of social media, except for the Formlabs case. This does not, however, mean that such impacts would not exist in the studied or other cases, but instead these could be reached by use of other research methods. The challenge in this kind of analysis is to find the appropriate methods to measure which financial impacts are created by crowdsourcing and which are related to other actions of the company. Thus, further research is needed to complement our study with other methods, such as direct interviews of companies that are practicing B2B crowdsourcing through social media-based crowdsourcing platforms.

Future research should complement these results by interviews of case companies to uncover the value functions that were not possible to observe by means of netnography, as well as for instance the potential negative impacts of crowdsourcing and social media to value functions. Due to the exploratory nature of this research and research methods, further studies should be carried out to further confirm the preliminary case-based results. Especially longitudinal studies to discover the long-term benefits and impacts of crowdsourced products on the profitability, compared to internally developed products, should be carried out. In

addition, based on the finding of this exploratory study, we see as one central further research area to be covered in more detailed level the potential negative impacts/costs of crowdsourcing, such as e.g. IPR risks. This kind of analysis would enable evaluation of the total tradeoff between benefits and sacrifices brought by crowdsourcing in B2B contexts. In addition, based on the increased understanding of the value creation logic of crowdsourcing in B2B relationships, analysis of the business models of B2B supplier crowdsourcing could also be achieved in future studies.

Although a lot remains still to be studied around the theme of crowdsourcing and social media, some practical implications has already been achieved in this paper. The managers of companies that operate in B2B markets and produce B2B products can utilize the recognized and analyzed social media-based crowdsourcing approaches as useful models for facilitating their own open innovation activities and experiments. They can for instance pinpoint examples of crowdsourcing use in B2B relationships, which support best the strategies of their own companies, for instance increasing the profitability, related to direct value functions, or innovation, related to indirect value functions.

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