
Social media's possibilities in business-to-business customer interaction in innovation process

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Abstract: In the paradigm of open innovation, it is recognized that valuable innovation-related knowledge is being increasingly widely distributed to different actors, organizations and communities. Social media can provide novel and useful ways of interacting and collaborating in innovation, as well as for creating new information and knowledge about customers for innovations. These have not yet been much investigated because of the novelty of social media concepts and approaches. Furthermore, the possibilities of social media are not yet well understood in the contexts of innovation and customer interaction, and importantly, while the business-to-consumer sector standpoint is more researched and understood, the business-to-business sector standpoint is very little studied in the above contexts. With the help of a literature study and a survey in Finnish companies, we studied the current state-of-the art concerning the potential and possibilities of social media in facilitating customer interaction in the innovation process.

Keywords: Social Media; Business-to-Business; Customer Interaction; Customer Understanding; Innovation; Innovation Process; Open Innovation; Customer Knowledge Management; Co-creation

1 Introduction

One of the most frequently recognized very central drivers contributing to the success in innovation and new product development is the good, in-depth understanding of customer and market needs (e.g. Barclay, 1992; Rothwell, 1974; Cooper, 1993; Hart et al., 1999). In addition, the successful inter-organisational and intra-organisational cooperation is a further major success factors in innovation (Read, 2000; Muffato and Panizzolo, 1996). In the growingly important paradigm of open innovation, it is recognized that valuable innovation-related knowledge is being increasingly widely distributed to different actors, organizations (such as users, customers and partners) and communities (Chesbrough, 2003). Various types of collaborative web tools and approaches, such as social media, can enable and significantly increase the use of the distributed knowledge both within and outside the company borders, as well as facilitate the related customer interaction.

Social media can provide novel and useful ways of interacting and collaborating in innovation, as well as for creating new information and knowledge about customers for innovations (Barker, 2008; Bernoff and Li, 2008; Cachia et al. 2007), which have not yet been much investigated because of the novelty of social media concepts and approaches. Furthermore, the possibilities of social media are not yet well understood in the contexts of innovation and customer interaction, and importantly, according to our in-depth literature research, while the business-to-consumer sector standpoint is much more well researched and understood, the business-to-business sector standpoint is very little studied in the above contexts.

Concerning the use of social media in customer interaction, there are studies that consider individual social media -related approaches, such as wikis, blogs, virtual worlds (e.g. Kohler et al., 2009) or customer communities, in the customer interaction and the creation of understanding about customer needs. The clear majority of such studies are case study based. There are also studies considering the marketing aspect and marketing potential of social media in customer interaction, but the majority of such that were found concentrate strongly on the one-sided company to customer aspect of marketing, instead of more interaction-related approaches. However, no studies were found to study the potential of social media at large in customer interaction especially from the innovation perspective, and more specifically, no academically reported empirical survey- type of studies were found in this area.

The aim of this research is to study the potential and new possibilities of social media in facilitating customer interaction in the innovation process. More specifically, we want to understand how significant opportunities social media is perceived by B2B's to provide in involving customers in innovation, how large potential social media is perceived to offer in the different forms of customer interaction in B2B's, how B2B companies benefit from using social media in customer interaction in the innovation process, and in which ways social media can support the acquisition of customer needs related information and knowledge.

In order to answer the above questions, an extensive systematic literature review on social media in B2B innovation and customer interaction contexts was performed to gain an understanding of the state-of-the-art. Using the review, a questionnaire was designed for Finnish companies with more than 50 employees to study social media potential and use in the above mentioned context.

The carried out literature review summarises what kind of applications and possibilities the social media concepts and approaches currently provide for Business-to-Business customer interaction and understanding customer needs in the different phases of the innovation process. In addition to giving examples of social media tools in different forms of customer interaction, the related novel possibilities offered by social media are analyzed and discussed in more detail.

2 Social media in business-to-business innovation

2.1 Definition of social media and web 2.0

Web 2.0 means technologies that enable users to communicate, create content and share it with each other via communities, social networks and virtual worlds, making it easier than before. They also make it easier to have real life experiences in virtual worlds and to organize content on the internet with content aggregators. (Lehtimäki et al., 2009) Such tools and technologies emphasize the power of users to select, filter, publish and edit information (Tredinnick, 2006), as well as to participate in the creation of content in social media. According to Constantinides and Fountain (2008), "Web 2.0 is a collection of open-source, interactive and user-controlled online applications expanding the experiences, knowledge and market power of the users as participants in business and social processes. Web 2.0 applications support the creation of informal users' networks facilitating the flow of ideas and knowledge by allowing the efficient generation, dissemination, sharing and editing / refining of informational content."

Social Media can be defined as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user generated content" (Kaplan and Haenlein, 2010). Furthering this, social media are often referred to as applications that are either fully based on user-created content, or in which user-created content or user activity have a significant role in increasing the value of the application or the service. Lietsala and Sirkkunen (2008) suggest using social media as an umbrella term, under which various and very different types of cultural practices take place related to the online content and people who are involved with that content.

A large number of generic different types of social media –related applications can be identified (e.g. Warr, 2008; Cooke and Buckley, 2008; Dewing, 2010), such as wikis (e.g. Wikipedia), blogs (e.g. company newsrooms), microblogs (e.g. Twitter, Yammer), social networking sites (e.g. LinkedIn, Facebook), social content communities (e.g. YouTube, Flickr, Digg), intermediaries (e.g. InnoCentive), mash-ups, prediction markets, and virtual social worlds (e.g. Second Life). Some of the practices are already relatively well established in private and business use, such as participating in wikis, blogging, and social networking, and some are still at least somewhat developing, such as microblogging, or using add-ons to build new types of hybrid sites, etc.

Academically, however, little is currently known about the use of social media in specifically B2B context, which is, for several reasons explained below, a very different environment especially concerning the objective of understanding business-to-business customers, users and their needs, comparing to the already relatively well understood business-to-consumer standpoint.

2.2 Requirements and challenges for social media use in business-to-business sector

The markets, the products and product development have significant differences between the business-to-business and consumer product sectors (e.g. Kotler, 1997; von Hippel, 1988; Webster, 1991; Holt et al., 1984; Urban and Hauser, 1993; Hanna et al., 1995). For instance, generally speaking products produced by business-to-business organizations are more complex, the development of new products takes significantly more time, and the customers are large organizations instead of single persons, which is the case in consumer (business-to-consumer) product sector. In industrial business-to-business markets, there are normally fewer customers compared to consumer markets, and the co-operation with customers is generally more direct and more intense than in the consumer sector. Industrial products are usually purchased by professional buying people who consider a large number of different criteria when making the buying decisions. They tend to acquire plenty of information about the industrial products to be purchased, and they normally evaluate the different alternatives objectively. The demand for industrial products is derived from the demand for the company's industrial customers' products and finally the end-user demand (Kotler, 1997; Webster, 1991). In industrial products, more emphasis is on physical performance and personal selling than in consumer products, where psychological attributes and advertising are critical for success (Urban and Hauser, 1993).

Concerning the topic of this study, it is significant that in general, customer information and knowledge is more complex in business-to-business markets than it is in consumer markets, for instance because it comes from many levels and from numerous sources within and outside of a company (Rollins et al., 2011). It is also very relevant that according to recent research, information utilization differs significantly between the two aforementioned markets: research in marketing suggests that customer and market information utilization in business-to-business markets is inherently different from that in consumer markets (e.g. Srinivasan and Lilien, 1999; Latusek, 2010; cf. Rollins et al., 2011).

Compared to the generally reported use of social media, or their use in B2C's, there are certain restrictions that may affect or limit the usability and usefulness of social media in the specific context of B2B's. As a consequence, also this may lead into different usage patterns and different applicability of social media in B2B's than in other environments. First, e.g. since the amount of customers is generally much smaller in B2B's, the use of crowdsourcing (outsourcing certain tasks normally performed by a company's employees to an undefined - and generally large - network of people in the form of an open call, either carried out by individuals or collaboratively (Howe, 2006)), which is quite commonly used in B2C's, is limited. 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 (e.g. Nordlund et al., 2008), and may thus seriously limit the usability of social media between B2B- companies and their customers. Third, various issues concerning the information security have been brought up already in the individuals' use of social media, but due to the nature of business-to-business communication, the business-to-business context contains severe information security risks potentially limiting the use of social media in ways that are not necessarily similarly problematic in B2C social media applications: for instance, while most employees might

be aware that it is not a good idea to respond unthinkingly to emails, such forethought is not necessarily applied to social media sites. This means that staff may e.g. unintentionally disclose sensitive corporate information without thinking (for instance concerning future product launches or violating customer confidentiality agreements), or betray information that can be aggregated to data gleaned from elsewhere to build up a useful corporate picture, not realising that it is stored online indefinitely and is searchable. (Everett, 2010; Langheinrich and Karjoth, 2010)

Taking the above differences into consideration, it is fair to presume that also the various types of innovation-related managerial approaches, e.g. collaborative approaches and customer needs assessment activities, 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.

2.3 Customers' role in innovation process phases

A number of authors have found it useful to divide the innovation process into three parts, especially regarding the viewpoint of innovation process -related customer interaction. According to Nambisan (2002) the phases are as follows: ideation (idea generation), design and development (engineering), and product testing and support phase (Nambisan, 2002; see also Füller and Matzler 2006; Desouza et al., 2008).

In the strategic management literature and quality management literature five roles have been identified for customers in value creation: resource, co-producer, buyer, user and product (Finch, 1999; Gersuny and Rosengren, 1973; Kaulio, 1998; Lengnick-Hall, 1996). Of these roles three (resource, co-producer, user) are most relevant for the innovation process and its main phases (Nambisan, 2002). Because our interest is to understand the role of customers and B2B's customer interactions in the creation of customer understanding, the division of innovation process accordingly seems relevant, enabling to analyze the roles and possibilities of social media in a useful and sufficiently detailed way. In the first phase, customers can be regarded mainly as a resource, i.e. the source of ideas, in the second phase customers can be regarded as co-creators (or co-producers), and in the final phase customers can be regarded as (end)users (Nambisan, 2002; also Chan and Lee, 2004; Füller and Matzler, 2006; Bartl, 2011).

2.4 Customer interaction forms in B2B innovation

Both in B2C and B2B sectors, the role of customers and/or users as a source of innovation has grown rapidly (e.g. von Hippel, 2005; von Hippel and Katz, 2002; Piller and Walcher, 2006). Not only that, but in addition, customer involvement in the co-creation of value has gained strongly in importance (e.g. Bartl et al., 2011; Sawhney et al., 2005). Novel types interaction ways have also come up with internet- based collaboration and social media (Sawhney et al., 2005; Piller and Walcher, 2006). Business-to-business companies have been slowly adopting such new ways, for instance in marketing related activities (e.g. Gillin and Schwartzman, 2011) but in many areas of potential application, the new interaction and related knowledge creation possibilities are not yet widely well known and well understood.

Even though customer involvement and interaction are important in both B2C's and B2B's, there are many factors which make the interaction and their emphases in several ways different. Too large generalizations should also be avoided, because the interactions

are of course dependent for instance on the industries in question. However, certain key emphases affecting the interaction can be found (Gillin and Schwartzman, 2011; Bernoff and Li, 2008; Kho, 2008; Salz, 2009):

- fewer customers and more in depth customer relationships in B2B's
- quite interconnected buyers in B2B's
- longer-term customer relationships in B2B's
- gatekeeper persons between customers and B2B's

The above topics mean, first of all, that since the above issues have to be taken into consideration, customer interactions often take very different shapes in B2B's than in B2C's. Second, these topics create both opportunities and challenges for B2B customer interaction. Third, social media has been already experienced to offer quite new possibilities in avoiding some of the created challenges (e.g. overcoming gatekeeper persons in B2B's) and strengthening the existing and creating even quite novel interaction forms concerning the opportunities (e.g. Gillin & Schwartzman, 2011; Bernoff and Li, 2008).

In addition to the above topics, the customer interaction forms of B2B's are very much dependent on the phases of the innovation process (e.g. Hemetsberger and Godula, 2007; Desouza et al., 2008). Customer roles vary in different innovation phases, and related interaction forms accordingly. The major roles of customers are customer as resource, customer as co-creator and customer as user (Nambisan, 2002; Füller and Matzler, 2007). Concerning the new possibilities of social media in facilitating the interaction in the above roles, probably especially the customer's role as co-creator is a particularly interesting issue with novel yet not fully researched possibilities. Concerning the creation of customer knowledge as the result of the supported interaction, according to Nambisan (2002) and Sawhney and Prandelli (2000), new (internet-based) technologies enable "a shift from a perspective of merely exploiting customer knowledge by the firm to a perspective of knowledge co-creation with the customers". Due to the above, it can be argued that the related customer interaction forms - as well as the roles of social media enabling these interactions - should be taken into consideration and studied specifically in the context of at least the different major phases of the innovation process (see e.g. Sawhney et al., 2005).

It is possible to categorise the major customer interaction forms in various ways. We have next listed, firstly, the most common major interaction forms used in social media - supported customer communication and interaction. Secondly, we have added an option of "no direct interaction", because first, B2B customer information and knowledge can be shared and created internally, e.g. by wiki-based tools and communities, and second, various analysis tools can be utilized for creating customer information and knowledge from e.g. social media supported communities even without direct interaction with customers, such as data mining and social network analyses. Thirdly, we have taken into consideration also the more novel e.g. community- related interaction possibilities provided by social media, web 2.0 technologies and other forms of internet- based novel applications. One interesting novel interaction form added is User Toolkits for Innovation, such as configurators and design tools (von Hippel, 2001; von Hippel and Katz, 2002, Piller and Walcher, 2006). We have included this type of interaction form, because User Toolkits have been used in the context of communities, as well as social

media, and they allow customers to design or co-design mass-customized, tailored or even totally new concepts themselves, as well as enable manufacturers to actually abandon attempts to understand user needs in detail in favour of transferring need-related aspects of product and service development to users (von Hippel, 2001; Antikainen, 2011), we have ended up with categorising the interaction forms as follows:

- **No direct interaction** (see above)
- **One-way interaction** (we define this as *mainly* one-way interaction, even though occasional feedback might be received)
 - One-way; company to customers (Passing product or service marketing related information to customers)
 - One-way; customers to company (Collecting customer information to support product development)
- **Two-way interaction** (interaction is essentially company's and customers' mutual interaction with no or only little interaction between customers)
- **Community-interaction** (we define this as company using or participating in mutual interaction in various types of customer communities, where important feature is mutual interaction between customers)
- **User toolkit - supported interaction** (user toolkits are an essential part of co-creation and allow new ways for customers as well as the company or companies to interact with each other)

3 Research approach

3.1 Literature review

A systematic literature review was performed using the following databases Scirus, ABI, Emerald, ScienceDirect and EBSCO with the following search term combinations: business-to-business and social media / web 2.0, b2b and social media / web 2.0 customer interaction and social media / web 2.0, customer understanding and social / web 2.0, customer knowledge and social media / web 2.0, co-creation and social media / web 2.0, and customer knowledge management. A total of 928 of articles were found as a result. In addition, we made searches concerning individual web 2.0 -related tools, such as wikis, blogs, twitter, LinkedIn, etc. in the specific context of B2B and the customer interface, using various combinations of search terms and above research databases. We searched and discovered some additional references by searching forward and backward referencing of the most relevant discovered articles. Authoritative blogs and books were used as additional sources to extend the literature review to cover more business-to-business examples that were relatively scarcely depicted in the existing academic literature.

3.2 Survey

At the beginning of the questionnaire the respondents were given a brief definition of social media: "By social media we mean applications, which are based either fully to user-created content, or user-created content and user activities have a significant role in increasing the value of the application or service. Social media is built on web 2.0 technologies, content and communities."

We clarified the emphasis of business, the alternatives being business-to-consumer, business-to-business or other markets, by asking which alternative would best describe their companies' main focus.

Social media generic opportunities were evaluated by asking the respondents to rate how much opportunities does social media provide in increasing customer orientation, in involving customers in innovation and service development on five-point scale ranging from very little to very much. Social media use was evaluated by asking the respondents how much social media is used in collaboration with customers. Furthermore, we studied the potential of social media in customer interaction by asking the respondents to evaluate how much potential does social media have in different types of customer interaction modes on five-point scale ranging from very little to very much.

3.1.1 Sample

A sample of 1984 Finnish decision makers from companies with more than 50 employees were surveyed. The contact information was selected based on persons working in companies employing more than 50 employees in either research and development or product design role. The respondents were selected on the basis of their position towards product development and innovation. Invitation to participate to the survey including covering letter explaining the focus of the survey was sent to the contact information obtained and given two weeks time period to complete the survey. After two weeks an email reminder was sent with one week more time to complete the survey. To improve the response rate telephone calls were made to contacts that had product and manager, developer or designer in title, a total of 262 were contacted of which (50 %) 132 were reached in two weeks time period.

A total of 122 responses were received to the Internet-based survey. The effective response rate was thus 6 % (122/1984). Of the responding firms, 78 % were manufacturing, 8 % construction, information and communication and wholesale and retail trade both 2 %, 1 % were mining and quarrying, professional, scientific and technical activities, and human health and social work activities, 7 % were industries classified as "other". The majority (76 %) of the respondents were oriented towards business to business markets and minority (26 %) towards business to consumer markets. The responses concerning the respondents position held within the firm were product development (67 %), management (16 %), IT (5 %), HR and sales (2 %), marketing (1 %), 8 % were in position classified "other".

To ensure the representativeness of the sample, the authors acquired general statistics of Finnish companies employing more than 50 persons. These statistics were obtained through Statistics Finland (www.stat.fi), the only established authority for producing statistics in Finland. The authors compared the number of personnel and annual revenue between the sample and the figures provided by Statistics Finland. The annual revenue and number of personnel from the sample seemed to represent closely the general figures

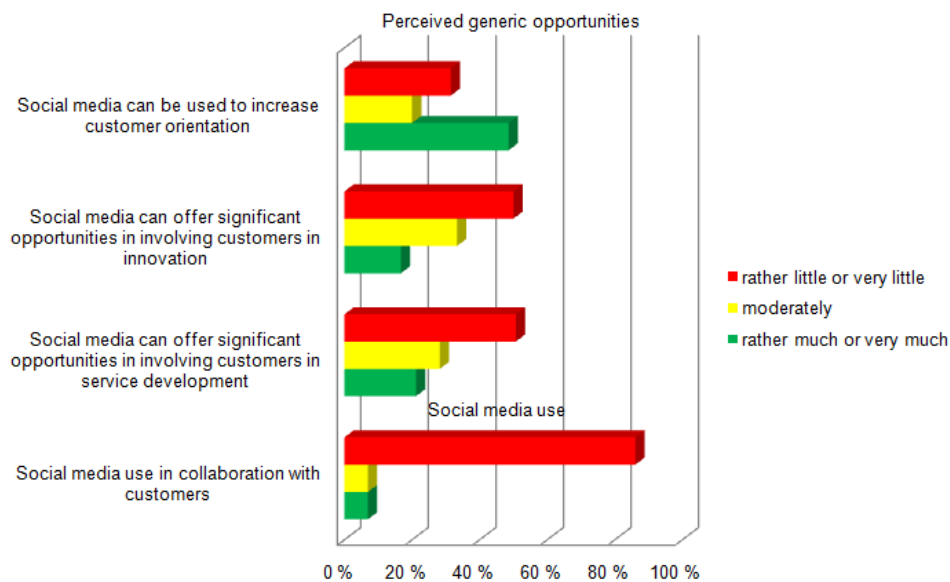
from the Finnish companies. Pearson's Chi-Square testing was performed on the data, which rejected the null hypothesis of independence on both occasions at $\alpha < 0.001$, giving further evidence that the results from the sample could be generalized to Finnish companies.

4 Results

4.1 Survey results

According to the Finnish B2B- sector related results presented in Figure 1, there was a large gap between the perceived generic opportunities of social media use with customers and the actual use of social media in collaboration with customers: from studied B2B companies, almost half (48.9 %) perceived important possibilities (rather much or very much) for social media to increase customer orientation, 16.6 % stated that social media can offer important opportunities (rather much or very much) in involving customers in innovation, and slightly more (21.1 %) considered that social media can offer important opportunities (rather much or very much) in involving customers in service development. However, only 5.6 % actually reported in significant amount to use social media in collaboration with their customers (rather much or very much).

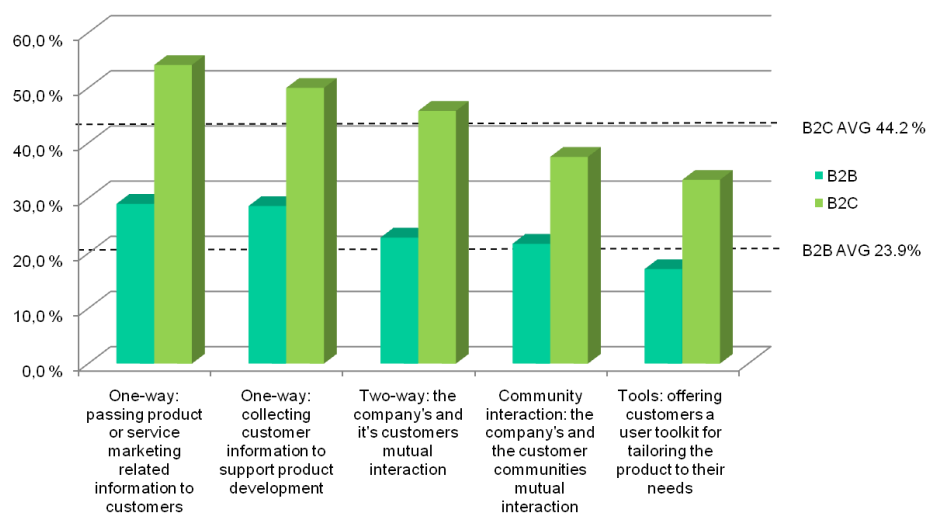
Figure 1 Social media use with customers vs. perceived generic opportunities.



According to results seen in Figure 2, the most frequently the studied B2B companies saw significant potential (rather much or very much) in mainly the one-way forms of customer interaction: passing product or service marketing -related information to customers, and collecting customer information (almost a third of respondents). Concerning the other more interactive forms of customer interaction, the

frequency of the studied companies perceiving (rather much or very much) potential from social media decreased somewhat in every further interaction mode that required more intense customer involvement in product or service development. The pattern was similar in this respect for B2C companies, although B2C companies recognized more potential in every mode of customer interaction: in addition to get an overall picture of the B2B's vs. B2C's, we calculated the average of rather much and very much responses in all interaction categories from B2B and B2C companies (shown in the Figure 2). This shows that, on the average, B2C's perceived considerable more potential in all the studied customer interaction forms.

Figure 2 Potential of social media in different types of customer interaction.



4.2 Literature review results

We present the condensed main results of the literature study in the form of a table (Appendix 1). The Appendix describes the found different types of examples of the current use of social media in the customer interface of B2B's. We categorised the examples according to the different earlier introduced customer interaction forms, as well as the phase of the innovation process. In all cases, the categorisation was, however, not fully straight-forward, because the found cases or examples did not report the usage patterns and tasks in full detail. On the basis of the table, we were able to find examples of the use in almost all the table subcategories. Some categories, however, proved to be more challenging: despite various user toolkits and community user toolkits (see e.g. Ahonen et al., 2007) being used in B2C's with and without direct support of social media, we were able to find little evidence of their use in B2B and community / social media - related contexts. One potential interesting B2C example was commercial third-party - enabled MyDeco community for house decoration, which integrated the use of configurator and design toolkits, various companies and consumers collaborating and participating in the community, as well as social media support for community stakeholder interaction.

Purely considering the number of different social media use examples, application areas with relatively wide array of different found examples, especially the after launch phases had significantly more case examples than the other phases. About half of the case examples were reported in academic journals.

5 Conclusions

On the basis of our results, currently there seems to be a significant gap between the perceived social media potential and actual use in B2B's, which we hope to enable to narrow down a little with the help of this study.

According to our literature research, academic B2B- oriented research in general is very scarce. Even if B2C's and B2B's social media use, applications and potential benefits do have some commonalities, and too large generalizations should be avoided because of the heterogeneity of the B2B sector, we have demonstrated in our study that concerning the above, B2B environment does differ significantly from B2C environment in several ways, especially when the contexts of innovation management, customer interaction and creation of customer knowledge and understanding are in the focal interest. In addition to the managerial viewpoint, this should be considered in the future research: more especially B2B- oriented empirical and theoretical research should be carried out to gain more insights in the more extensive usability of social media in various B2B industries and contexts. A large part of the current studies did not specify the applicability of results in B2B context.

Our literature review- based results in the enclosed Appendix 1 summarized what kind of applications and possibilities the social media concepts and approaches currently provide for Business-to-Business customer interaction and understanding customer needs in the different phases of the innovation process. The review of the table in Appendix 1 shows, first of all, that despite the often expressed doubts towards the applicability of social media in B2B's, social media has been already utilized in a large variety of ways and purposes in the B2B sector, even if the general adoption rate is still quite low concerning the focal topics of this study. On the basis of the results, social media truly seems to offer very novel and innovative ways to deepen and widen the B2B- related customer interaction, for the sharing of customer- related information, as well as for the resultingly created new customer information and knowledge. Many ways that B2B's utilize social media are different and quite unique compared to the traditionally in B2C's used approaches (e.g. dedicated Linked-in groups). We found also an interesting example of commercial third-party -enabled MyDeco community for house decoration, integrating the use of configurator and design toolkits with community and social media, which could be used as a model for also B2B purposes and for new ways of B2B customer interaction.

Quite interestingly, concerning the experienced potential of social media in different types of customer interaction forms in the B2B's of our survey, the experienced highest potential (much or very much potential) was in the one-way customer interaction (both company to customer and customer to company). Less potential was seen in the more social and collaborative types of interaction forms, which are considered characteristically as the "core" of social media. This might indicate for instance that a) in B2B environment, the less interactive solutions really do offer more opportunities for

B2B companies in general than the more social and interactive ones b) it is more difficult for companies to understand the real potential of social media in the more novel and the more interactive collaboration forms. This is an avenue we will study in more detail in further research.

In our earlier study (Kärkkäinen et al., 2010), we found that major reasons for B2B's not using social media innovation, despite the perceived extensive potential there, were the lack of understanding the possibilities of social media in innovation, the difficulties of assessing the financial gains from social media, the difficulties in adopting new mental models and practices needed for the adoption, as well as the lack of evidence from similar cases using social media in innovation. Managerially, our results can be used to help answering most of the above barriers, and to gain a better understanding on how social media can be used in B2B customer interaction and how social media can support the acquisition of customer need –related information and knowledge. The results can be used for widening of the managers' mental models of the usefulness and applicability of social media in B2B innovation and the creation of customer understanding (instead of seeing social media narrowly as Facebook and Twitter, as is often the case in practice). Considering the above, the described examples can also help companies to more easily experiment with and adopt social media.

Furthermore, due to the low current B2B adoption of social media implied by the results of this study and our earlier survey (Kärkkäinen, 2010), and the large variety of useful opportunities, the companies that first experiment with and develop social media -based ways to support B2B customer interaction might benefit strongly from these investments. In addition, consultants might benefit from these results by taking advantage of the described B2B companies' examples of social media approaches.

Even though B2B's could also use and benefit from consumer or end-user related communities in increasing their understanding of their customers and their needs by engaging also in them, we have not studied this option in this paper, but focused here on the companies' and their business customers' interaction and the related customer understanding. This issue could be studied in further research.

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Appendix 1 Literature review results: Examples of social media use in B2B companies customer interaction in innovation process.

Customer interaction forms	Ideation phase (idea generation)	Concept and Development phase	Product Testing and Support phase
No direct interaction	Detecting weak signals from Second Life data and from observing changes in search behavior (Cachia et al., 2007), Social bookmarking tools in finding and collecting weak signals of possible future needs (Näkki & Antikainen, 2008)	Using Twitter in marketing research – to read what customers have to say (Kaplan & Haenlein, 2011)	Using social networking profiles and their links to other groups to scope out customers interests (Gillin & Schwartzman, 2011), use of web analytics to see what keywords users are searching and using that keyword information to create an editorial calendar (Thomas & Barlow, 2011)
One-way interaction: (company to customers)	Sharing and discussing about industry trends with customers (e.g. IBM PartnerWorld Community)	Keeping customers informed of upcoming product features and products (e.g. NI Labs)	Automating sales proposals to customers using mashups(Ogrinz, 2009), reverse product placement by creating a fictional brand in fictional environment and then releasing it into the real world (Wasserman, 2007), using LinkedIn to get past the traditional gatekeeper departments, who often try to restrict access to decision makers (Gillin & Schwartzman, 2011), customizable widgets that deliver content to customers (Thomas & Barlow, 2011), sales promotions in Twitter (Kaplan & Haenlein, 2011)
One-way interaction:: (customers to company)	Users/customers can vote for conference themes to be discussed of in Second Life (Barker, 2008), users tags and tag clouds can be used in discovering weak signals and trends (Cachia et al., 2007), customers can express their ideas in online suggestion boxes setup by companies (Prandelli et al. 2006)	Blogs can provide customer need information for product development (Singh et al., 2008)	Using mashups to push customer enhancement requests from customer service to product managers (Ogrinz, 2009), using blogs to get feedback and to understand customers' perceptions of new product features (Singh et al., 2008)
Two-way interaction (The company's and it's customers mutual interaction)	Using professional customers as "credible private focus groups" in LinkedIn (Gillin & Schwartzman, 2011)	Designing of real world items in collaborative spaces, e.g. Second Life (Ondrejka, 2005)	Answering product questions, troubleshooting technology challenges and solving customer service issues in Twitter (Thomas & Barlow, 2011), hearing what customers have to say and fixing customer problems (Kaplan & Haenlein, 2011)
Community-interaction (The company's and the customer communities mutual interaction)	Using wikis to share ideas (inside and outside of organization) , also enabling asynchronous distributed brainstorming (Standing & Kiniti, 2011), idea competitions using open innovation intermediaries (InnoCentive, NineSigma, Yet2.com) to screen for ideas and solutions from communities (Piller and Walcher, 2006; Antikainen 2011)	Online test laboratory can be used to gather and to discuss about feedback about prototypes (Näkki & Antikainen, 2008), Wikis can focus on certain products (such as NI LabVIEW, Red Hat JBoss) or industry (e.g. KATU – Kaupan tutkimus), blog based tool where users may suggest needs and development ideas for new products and services, also the rating and commenting of ideas by other users (Näkki & Antikainen, 2008)	Exposing customer complaints to public and empowering users to submit and vote on ideas and product improvements (Warr, 2008), blogs in confronting negative feedback (Singh et al., 2008), IBM's YouTube channel where partners and customers were invited to upload videos explaining how IBM solutions had helped their businesses(Marketo, 2010), Marketo Inc. marks tweets about their product as "favourites", providing links to these on their website, allowing prospects to see what other customers are saying about their product and enabling "social validation" (Marketo, 2010)
User toolkit – supported interaction	Users toolkits enable users to design products and services to fit their own needs (von Hippel and Katz, 2002), MyDeco is a third-party enabled community, that provides community-integrated home design configurators and design tools for consumers, that bridge consumers, designers and architects, furniture and home decoration companies, enabling them e.g. to discover market trends and weak signals.	User toolkits for innovation, e.g. software design tools for customers to perform design (of company products) themselves (von Hippel, 2001), user design through web interfaces that enable customers to select interactively the features they prefer in their ideal product (Dahan & Hauser, 2002)	MyDeco uses configurator and design tools, combined with social media and communities that are used by consumers in household room design and decoration. This provides customer understanding for architects, designers and manufacturers. (mydeco.com)