Author(s)	Kärkkäinen, Hannu; Jussila, Jari; Janhonen, Johanna
Title	Managing Customer Information and Knowledge with Social Media in Business-to-Business Companies
Citation	Kärkkäinen, Hannu; Jussila, Jari; Janhonen, Johanna 2011. Managing Customer Information and Knowledge with Social Media in Business-to-Business Companies In: Lindstaedt, Stefanie; Granitzer, Michael (ed.) .i-KNOW '11 Proceedings of the 11th International Conference on Knowledge Management and Knowledge Technologies, 7-9 September, 2011, Graz, Austria . International Conference on Knowledge Management and Knowledge Technologies New York, NY, ACM . 1-8.
Year	2011
DOI	http://dx.doi.org/10.1145/2024288.2024309
Version	Post-print
URN	http://URN.fi/URN:NBN:fi:tty-201401231056
Copyright	© ACM 2011. This is the author's version of the work. It is posted here for your personal use. Not for redistribution. The definitive Version of Record was published in Proceedings of the 11th International Conference on Knowledge Management and Knowledge Technologies, http://dx.doi.org/10.1145/2024288.2024309.

Managing Customer Information and Knowledge with Social Media in Business-to-Business Companies

Hannu Kärkkäinen
Tampere University of Technology
Department of Business Information
and Logistics
P.O. Box 541, FIN-33101 Tampere
+358 40 8490228

hannu.karkkainen@tut.fi

Jari Jussila
Tampere University of Technology
Department of Business Information
and Logistics
P.O. Box 541, FIN-33101 Tampere
+358 40 8490470

jari.j.jussila@tut.fi

Johanna Janhonen
Tampere University of Technology
Department of Business Information
and Logistics
P.O. Box 541, FIN-33101 Tampere
+358 40 8490466

johanna.janhonen@tut.fi

ABSTRACT

The recent innovation literature has increasingly emphasized the efficient use of knowledge and information not only inside the company borders, but particularly the knowledge locating outside the company borders, such as the knowledge of customers and users. In addition, the co-creation of new knowledge has gained fast in importance. Various types of collaborative web tools and approaches, such as social media, can enable and significantly increase the collaboration, the collaborative knowledge creation and the use of the distributed knowledge both within and outside the company borders. In this paper, we have studied the role and possibilities of social media in the sharing and creation of customer information and knowledge especially from the perspective of business-to-business companies' innovation with an extensive literature review. Business-to-business context was chosen because it is in many ways a very different environment for social media than business-to-consumer context, and is currently very little academically studied.

Categories and Subject Descriptors

J.4 [**Social and Behavioral Sciences**]: Economics.

General Terms

Management, Performance, Design.

Keywords

Social media, web 2.0, innovation, business-to-business

1. INTRODUCTION

According to a number of so called "success factor studies" of innovation, one of the most frequently recognized very central drivers (maybe the most commonly recognized essential individual driver) contributing to the success in innovation and new product development is the good, in-depth understanding of customer and market needs e.g. [3], [78], [19], [33]. Secondly, the successful inter-organisational and intra-organisational [73] cooperation is one of the other major success factors in innovation, some studies going further and claiming it to be even the most important success factor [60]. Recent literature in innovation management has recognized a new increasingly important innovation paradigm, which is based on an open innovation model [15], [24], [98]. This paradigm, "open innovation", emphasizes the importance In this paradigm, also the significance of knowledge creation by e.g. open communities of peers is emphasized. Various types of collaborative web tools and approaches, such as social media, can enable and significantly increase the collaboration and the use of the distributed knowledge both within and outside the company borders [57], [54], as well as support the transition to more open innovation processes.

Social media can provide novel and useful ways of interacting and collaborating in innovation, as well as for creating new information and knowledge for innovations [4], [7], [10], [11] which have not yet been very thoroughly investigated because of the novelty of social media concepts and approaches. Also simultaneously, the possibilities of social media are not yet fully understood in the context of innovation. Still further, the use of social media in different specific contexts, such as the business-to-business (B2B) sector and in different types of industries, is currently not yet well understood.

There are studies that consider individual social media -related approaches, such as wikis, blogs, virtual worlds (e.g. [44]) or customer communities, in the information sharing and creation of understanding about customer needs in the innovation process. 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 the customer interface, but the few such that were found concentrate strongly on the marketing aspect, and here, mainly the company to customer aspect of marketing, However, no studies were found to study the potential of social media more comprehensively in the customer interface especially from the innovation viewpoint. The found few academic survey-type studies reported practically no recent results concerning the role, possibilities and benefits of social media in the creation of customer knowledge and understanding in the innovation context (except for some one-directional company-to-customers/consumers type of marketing- oriented studies. e.g. [31]).

The goal of the paper is to study and analyse the role, possibilities and pragmatic company examples of social media in the sharing and creation of customer information and knowledge especially from the perspective of business-to-business companies' innovation. More specifically, we want to understand, most importantly,

- what is the status of social media research in the dissection of B2B, innovation and customer interface?
- which novel types of possibilities social media can provide in the management of customer information and knowledge in B2B companies in general?
- which type of possibilities and benefits social media can bring for managing customer knowledge in the different phases of the innovation process?

A systematic literature review on social media in innovation and customer interface contexts was performed to gain an understanding of the state-of-the-art on the above research goals.

2. SOCIAL MEDIA IN B2B INNOVATION

2.1 Social Media and Web 2.0

Web 2.0 -based tools and technologies emphasize the power of users to select, filter, publish and edit information, as well as to participate in the creation of content in social media [93]. According to Constantinides and Fountain [18], "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" [39]. 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.

A large number of generic different types of social media –related applications can be identified, such as collaborative productions (e.g. Wikipedia), social content communities (e.g. YouTube, Flickr, Digg), blogs (e.g. company newsrooms), microblogs (e.g. Twitter), intermediaries (e.g. InnoCentive), mash-ups, social networking sites (e.g. LinkedIn, Plaxo, Facebook), prediction markets, social workspaces (e.g. SharePoint) 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 mashups 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. The above types of applications and approaches provide a starting point, but without examples, their use and possibilities in B2B environment may be very difficult to understand (see e.g. [47])

2.2 Possibilities of Social Media in Knowledge Management

In order to understand the role of social media in customer information and knowledge creation and management, we will first briefly take a look at the reported main possibilities of web 2.0 and social media in knowledge management in general. The knowledge management literature has emphasized the importance of interactive knowledge management technologies in bringing the human aspect into knowledge management [2], [8], [67], [76], [85]. Web 2.0 is very close in its principles and attributes to knowledge management, and web 2.0 should affect knowledge management in organizations [49]. Participation is a key feature of web 2.0, web 2.0 technologies and applications allowing any users to freely create, assemble, organize (e.g. use tagging and social bookmarking), locate and share content [36]. With the rise of such new possibilities of web 2.0 for knowledge management, the concept "Knowledge Management 2.0" or KM 2.0 has been devised, referring to the novel possibilities of social media for knowledge management.

Social media and web 2.0 has been noticed to bring several benefits for the field of knowledge management, for instance enhancing networking and the use of weak ties [86], [74], [54], [43], [81], facilitating the mobilization of tacit knowledge [75], [86], [14], [9], [61], [74], knowledge acquisition [75], [86], [74], [54], organizing knowledge and information [74], information and knowledge sharing [54], and knowledge maturing [84], [8], [76], [85].

According to literature, social media provides quite novel and useful ways of interacting and collaborating in the innovation process, as well as for creating new information and knowledge for innovations (e.g. [7], [4], [10]). For instance, according to Schneckenberg [86], web 2.0 technologies are efficient in building and sustaining relationships in disperse social communities, in creating and extending networks, and in producing synergy effects through aggregated interaction patterns of users. An important thing in the networking aspect is also providing a useful access to weak ties locating at the periphery of people's networks, which enable the creation of innovative ideas, radical innovations and new knowledge (see e.g. [28], [80]). According to Constantinides and Fountain [17], 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, as well as/ refining of informational content. Several of the above types of attributes and applications of social media offer quite novel possibilities for gathering user and customer-related data and information, as well as for understanding customers, users and their needs (e.g. [62]).

According to a survey [9], web 2.0 tools, in particular wikis, Blogs, and Real Simple Syndication (RSS) feeds, enhanced the studied companies' communication with their customers and suppliers on core business processes, such as product design and development, encouraging also the collaboration and knowledge exchange between employees. Concerning the development of new innovations, customers can be involved not merely in generating ideas for new products but also in co-creating them with firms, in testing finished products, and in providing end user product support [99], [62].

In brief, new web-based technologies, such as social media, can enable a shift from a perspective of merely exploiting customer knowledge by the firm to a perspective of knowledge co-creation with the customers [82].

2.3 Social Media in B2B

2.3.1 Special Characteristics of 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. [45], [96], [35], [32]). 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 [45], [96]. In industrial products, more emphasis is on physical performance and personal selling than in consumer products, where psychological attributes and advertizing are critical for success [95].

Concerning the topic of this study, the creation of customer understanding with social media in business-to-business context, 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 [77]. 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. [90], [48], cf. [77]).

2.3.2 Challenges for Social Media use in Business-to-Business Sector

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. For instance, the types of at least partially social media –based approaches such as crowdsourcing, which can rather easily be applied in consumer markets where there might be huge numbers of users or customers usable for such approaches, are very often seen as a rather distant idea in business-to-business context because of the relatively small number of customers. Also the motivators that encourage individual consumers or hobbyists to participate in social media –based user-communities can be very different from those of professional (B2B sector) customers: for instance, while the aspects of recognition and sense of community or self-esteem are undoubtedly important also for employees in business-to-business sector firms, it is to be doubted whether they are important motivators enough to become drivers for them to act as a user-innovator [55]. On the other hand, in the context of such innovation, legal contracts and IPR –issues can become challenges of free revealing of product or business ideas in the inter-organizational innovation collaboration in the business-to-business markets (e.g. [55]).

The above factors lead into thinking that the usefulness and potential of social media should be empirically studied especially in the context of business-to-business companies, trying to assess the significance of the expected challenges and benefits of social

media in innovation from the specific standpoint of business-to-business companies. Even if clearly most of the available empirical studies are done from the B2C standpoint or a quite generic standpoint, some empirical social media studies have noticed and taken into consideration the specific nature of business-to-business [50], [21], [12]. However, most of such found empirical studies are not academically implemented and reported, and no empirical survey-based studies with innovation standpoint has been found, despite our extensive literature research, in the business-to-business context.

2.3.3 Customer roles in information and knowledge management in the innovation process

In several studies in the innovation management literature, the authors have found it useful to divide the innovation process into three parts, especially regarding the viewpoint of innovation process -related customer roles and customer interaction, analyzing them accordingly: the (fuzzy) front end (phases before product concept), the product development phase (phases between concept and launch), and the commercialization (phases during / after launch) phase [62], [23], [20].

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 [22], [25], [40], [51]. Of these roles three (resource, co-producer, user) are relevant for the innovation process [62]. In the first innovation process phase customers can be regarded 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 [62], [13], [23], [6]. These roles bare very close resemblance to the afore-described three main phases of the innovation process, and support the division of the innovation process accordingly in the context of this study, enabling us to better analyse the different roles and benefits of social media in the creation of new customer insights, understanding and knowledge in more detail than has been achieved so far.

The possibilities for social media in creating customer understanding varies significantly in the different phases of the innovation process, because 1) the patterns of interaction between a firm and its customers vary with the roles the customers play in the development process [40], [52] 2) the knowledge creation activities vary depending on the nature of knowledge to be created, e.g. knowledge acquisition about product from different sources or knowledge conversion of factual knowledge about a product to experimental knowledge about is usage in specific context [62], and 3) customer's motivation to participate or be involved in the innovation process varies greatly depending on the innovation process activity, for example there are different motivations to participate in product development than there are in participating in product support.

2.4 Customer Needs, Knowledge and Understanding in B2B Innovation

Customer needs are, according to Holt et al. [35], discrepancies between the existing and the wanted situation that may or may not be recognized. These discrepancies can be thought to cover the more obvious short-term problems as well as long-term development needs and opportunities. Along with other rather similar types of definitions found in literature, Cohen [16] has defined customer needs as statements, in the customer's words, of a benefit that a customer gets, could get or might get from a product or service.

Holt et al. [35] classify customer needs into existing and future needs. Existing needs are of a conscious nature, and therefore usually relatively easy to assess. However, the existing needs can include unarticulated needs which have not been properly recognized by the company assessing its customers' needs. Latent needs (often also referred to as 'hidden' needs) are needs that many customers recognize as important in the final product but do not or are not able to articulate in advance [94]. Future needs do not exist at present, but will materialize in the future.

While customer knowledge can be created by analyzing and interpreting customer needs and various types of customer data and information, a more in-depth customer understanding requires that customer is involved in the process [72], [63]. This is briefly because while a company should be an expert in the solving of technological and product or service –related problems in their field of operation, business-to-business customers should naturally be better experts in understanding their own problems, developments needs, the ways the products are actually used, and their own business environment (see e.g. [47], [46]).

Customer understanding can be considered as a fit between customer knowledge and the objectives and possibilities the organization or network of organizations can offer to their customers. Nordlund [63] has identified 6 broad categories of customer understanding: the givens (knowledge about customers and the way in which the concept being developed integrates into the existing infrastructure of the customer), customer's world (knowing the chain of customers from direct customers to end customers and the logic of different customer segments, also the power issues within the relations), customer needs (customer needs and requirements), feedback about the concept, appealing to customers (specific problems and challenges experienced by the customer and the benefit or gain that the concept brings), number of customers and the willingness to pay.

3. RESEARCH APPROACH

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, customer knowledge management, and CRM 2.0 / social CRM. A total of more than 1000 articles (1357) were first received as a result, which were then skimmed for relevance and reviewed in more detail. In addition to the above, 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. Because of the novelty of the B2B perspective of social media, and the resulting relatively small amount of existing academic journal papers, in addition to the above literature, authoritative blogs and books were used as additional sources to extend the literature review to cover more business-to-business examples.

4. LITERATURE REVIEW RESULTS

First, on the generic level, the literature survey revealed that the knowledge about social media use in innovation activity is currently fragmented into studies of individual applications, tools and technologies with little focus on the big picture, e.g. the whole innovation process and its parts, and it is mainly based on individual cases. The very few studies combining social media, customer interface and customer understanding, as well as the B2B standpoint (e.g. [26], [92], [50], [12], [21]) have been studied mainly from a one-way (company to customer) marketing perspective, and little attention is placed on innovation. Moreover, research is virtually nonexistent in the area where social media, B2B and innovation dissect. Most of the found case studies and empirical studies are not academically implemented and reported (e.g. [26]). Some innovation-oriented studies exist, but they mainly include references towards B2C context (e.g. [83], [44], [23], [97]) or consider social media use quite generically (e.g. [72]). Empirical academic studies in the intersection are currently almost non-existent. In addition, despite our extensive literature research, no academically carried out empirical survey-based studies with innovation standpoint have been found in regard to the business-to-business context.

Concerning the found literature, one relatively recent interesting stream of literature concerning the use of social media in creating customer understanding is "social CRM" or "CRM 2.0" (e.g. [87], [29], [49]). As CRM has traditionally been seen as "a set of philosophies, strategies, systems and technologies that would effectively and efficiently manage the transactions of customers with companies and the subsequent relationships with those customers" [30], the concepts social CRM and CRM 2.0 are used to mean the use of social media in creating customer insights, information and knowledge. According e.g. to Greenberg [29], CRM 2.0 provides strategies and tools for new kinds of customer insight, meaning for instance the kinds of insight that allow customers to personalize their interactions and experiences with companies, as well as the company and the customer co-creating the knowledge necessary for insight. However, the existing such studies bare little or no direct implications to business-to-business companies or innovation, and they focus more on sales and marketing viewpoints.

While co-creation of customer understanding with customers is regarded as an important paradigm shift in strategic management and innovation management literature, most of the research on the field is focused only on B2C customers, that is consumers as customers (e.g. [71], [70], [79], [68], [58], [29]). Social media use in co-creation was not clearly reported in this literature stream from the specific standpoint of business-to-business.

We were able to find around one dozen academic studies which reported examples or case studies in the intersection of focal topics of interest (B2B, customer interface, innovation) in this study. The examples were reported in Table 1. The rest of the found and reported examples were from authoritative blogs, non-academic books and white papers. Relatively few references reported the cases in such a detail that the exact tasks and purposes of the use of social media or even the exact web 2.0 or social media tools and applications had been clearly explicated. In some cases, it was not fully clear in which innovation process phases the tools and approaches had been utilized. In the more clear cases, we have included such cases in our table, mentioning the type and the explicitness of reference in the form of superscript to such references. Despite the mentioned challenges, we were able find a relatively large variety of different approaches and targets of use for social media in B2B's and their customer interface.

Table 1.Examples of the ways of using social media applications in different phases of innovation process from B2B companies perspective. (1) academic source mentioning B2B context, (2) authorative blog or book source mentioning B2B context (3) source not mentioning B2B context or applicability to B2B context, * innovation process phase not defined

Applications	Front end	Development phase	Commercialization
Blogs	Attracting and activating lead user to participate in innovation contests [1] (3)*	Providing customer need data for product development, getting feedback, understanding better customer's perceptions of new features [88] (1)	Product launch [5] (2), user feedback in real time concerning products [88] (1) and product documentation [41] (1)
Microblogs	Attracting and activating lead user to participate in innovation contests [1] (3)*	Using Twitter in marketing research – to read what customers have to say [37] (2)*	Obtaining customer feedback [38] (3), promoting product launch [72] (3) [5] (2), faster communications between customer and vendor communities[41] (1)*
Wikis	Idea generation [34] (3) [91] (1)	Using wikis as a common repository where knowledge can be centrally stored and retrieved, also leveraging collective intelligence [91] (1)	Sharing ideas on commercialization and for obtaining feedback from customers and employees [91] (1), Managing customer support tickets [27] (3)
Mashups	Use of mashups in automating the web data-gathering effort and sharing the data to stimulate new research and analysis [65] (2)	Automating product trials and pushing customer enhancement requests from the customer service to the product manager and back to the customer [65] (2)	Widgets that deliver content to customers [5] (2), Mashups in improving, customer service, customer enhancement requests and product trials [65] (2) [89] (3) and to gain more information about prospects [41] (1)*
Social / professional networking tools	Find out what professionals (customer, partners, competitors) are talking about (2), using professional customers as "credible private focus groups" in LinkedIn (2), joint learning-processes among customer[69] (3)	Customer as co-producer [18] (3)	B2B customer prospecting [26] (1), Getting past the traditional gatekeeper departments [26] (1)
Social bookmarking tools	Tags and tag clouds in discovering weak signals and trends [10] (3), Social bookmarking tools in finding and collecting weak signals of possible future needs [64] (2)		
Virtual worlds	Pilot application [69] (3) Need identification and idea generation [44] (3) Future scenarios that can be lived virtually [10] (3) Users/customers can vote for conference themes to be discussed of in Second Life [4] (1)	Product and concept testing in virtual worlds [44] (3) [72] (3), Designing of real world items in collaborative spaces [66] (3), Customer help in designing and building prototypes as part of market research process [59] (3)	Test and market launch, [44] (3), Reverse product placement by creating a fictional brand in fictional environment and then releasing it into the real world [94] (3)
Social workspaces	Virtual customer communities where customers can participate in value creation activities including new product development. [62] (3)	Exchange of research opportunities than can address emerging customer needs in collaborative virtual workspaces [53] (3)	
Social media monitoring and analytics	Identifying weak signals by detecting and observing changes in search behavior [10] (3), Finding out where conversations about firm are held [42] (3)	Analyzing unstructured comments of customers to help achieve optimal decision-making in product development [56] (3)	Measuring reputation [42] (3), collecting information on customers search behavior to provide new angles to customer understanding [41] (1)

5. CONCLUSIONS

First, in the more generic sense, our paper has analysed how and why the use of social media in B2B sector differs from the use in B2C, and why it should be studied specifically from B2B perspective, especially when the use and benefits of social media are wanted to be understood from the innovation and customer knowledge management perspective. This has not been earlier done in academic research very systematically.

Second, our literature research showed that so far, academic studies on social media in the specific context of the B2B sector are very few, and quite clearly, more empirical academic case and survey- based research should be carried out in this context. Second, we have explained and showed why the possibilities and the solutions of social media in the creation of customer knowledge in B2B companies should be analysed in the different phases of the innovation process, and helped to understand how the process phases differ from each other from the customer information and knowledge management perspective. The earlier studies have not considered the innovation process phases separately, and they have not been able to create a varied, very detailed and holistic picture of social media use from the innovation process perspective of B2B companies. Contributing to this lack, our paper has achieved to create, taking the above into consideration, a holistic view from the social media opportunities from the B2B innovation process standpoint.

Third, we have reviewed and synthesized research and cases on social media use specifically from the perspective in which B2B companies try to understand their business customers' needs, aiming to use social media in managing customer -related information and knowledge. This has not been done very extensively in earlier studies, and thus, this paper contributes to the holistic understanding of the use and possibilities of social media from the perspective of B2B companies' innovation process.

Summarized in the Table 1, we demonstrate that not only B2C's but also B2B's really can use and benefit from social media in their innovation process and customer information/knowledge creation. We also demonstrate that there are a multitude of very different ways for using social media in innovation and customer information/knowledge creation which B2B's can utilize. Furthermore, a large variety of tools and applications from blogs and wikis to virtual worlds and social workspaces have been and can be applied in B2B context. In addition, we show that social media offers a variety of options for B2B's in all the studied three innovation process phases, including the front end phase.

Fourth, the results from our study show that the possibilities and the potential of social media are quite different in the different innovation process phases. In addition, the literature study confirmed that the business-to-business applications of social media are, despite some similarities, in many ways different from the common applications in the business-to-consumer sector, and that for instance crowdsourcing types of applications commonly found in B2C's were not discovered.

On the general level, our study has demonstrated that various web 2.0 and social media approaches can promote the change from merely exploiting customer information and knowledge by companies to actual knowledge co-creation with the customers. Most of the novel opportunities of social media for generic knowledge management (KM 2.0) which were reported in Section 2 had been applied in various ways in the different use cases. Our study demonstrated that such possibilities have been exploited in a number of B2B's, and in many cases, the received benefits have been significant. Many applications could not have been created with traditional web 1.0 types of approaches.

Conclusively, we can say that despite the rather general scepticism towards the use of social media in B2B sector showed by many practitioners and some academics, the results of this study demonstrate that social media offers significant possibilities and benefits to B2B sector, concerning both the innovation process and the related customer information and knowledge management.

Within the limits of a single research, we focused on bringing forth the different ways of utilizing social media in innovation and customer knowledge creation from B2B's perspective which has been very little studied and is still badly understood. In further research, we will describe and analyse in more detail in which ways social media can benefit the management and creation of knowledge about customers and their needs, focusing e.g. on the various existing and novel types of interaction forms that social media can enable and support. This is useful, because one of the basic assumptions in social media is, of course, the enabling of communication, collaboration and social interaction.

6. REFERENCES

[1] Adamczyk, S. et al. 2010. Call for attention–attracting and activating innovators. *R&D Management Conference* (2010), 14.

[2] Ardichvili, A. et al. 2003. Motivation and barriers to participation in virtual knowledge-sharing communities of practice. *Journal of knowledge management*. 7, 1 (2003), 64–77.

[3] Barclay, I. 1992. The new product development process: past evidence and future practical application, Part 1. *R&D Management*. 22, 3 (1992), 255–264.

[4] Barker, P. 2008. How social media is transforming employee communications at Sun Microsystems. *Global Business and Organizational Excellence*. 27,4 (2008),6–14.

[5] Barlow, M. and Thomas, D.B. 2011. *The Executive's Guide to Enterprise Social Media Strategy: How Social Networks Are Radically Transforming Your Business*. Wiley.

[6] Bartl, M. et al. 2010. Co-Creation in New Product Development: Conceptual Framework and Application in the Automotive Industry. *Conference Proceedings R&D Management Conference–Information, Imagination and Intelligence, Manchester* (2010), 9.

[7] Bernoff, J. and Li, C. 2008. Harnessing the power of the oh-so-social web. *MIT Sloan Management Review*. 49, 3 (2008), 36.

[8] Braun, S. and Schmidt, A. 2007. Wikis as a technology fostering knowledge maturing: What we can learn from wikipedia. *7th International Conference on Knowledge Management (IKNOW'07), Special Track on Integrating Working and Learning in Business (IWL)* (2007).

[9] Bughin, J. and Manyika, J. 2007. *How businesses are using Web 2.0: A McKinsey Global Survey*. McKinsey Quarterly.

[10] Cachia, R. et al. 2007. Grasping the potential of online social networks for foresight☆. *Technological Forecasting and Social Change*. 74, 8 (2007), 1179-1203.

[11] Cameron, B. 2008. *IT Can Help Accelerate Business Innovation - Forrester Research*. Forrester Research.

[12] Carabiner 2009. Social media: How B2B Companies Can Connect. Carabiner.

[13] Chan, T.Y. and Lee, J.F. 2004. A comparative study of online user communities involvement in product innovation and development. *13th International Conference on Management of Technology IAMOT, Washington DC, April* (2004), 29.

[14] Chatti, M.A. et al. 2007. The future of e-learning: a shift to knowledge networking and social software. *International Journal of Knowledge and Learning*. 3, 4 (2007), 404–420.

[15] Chesbrough, H.W. 2003. *Open innovation: the new imperative for creating and profiting from technology*. Harvard Business Press.

[16] Cohen, L. 1995. *Quality function deployment: how to make QFD work for you*. Addison-Wesley.

[17] Constantinides, E. and Fountain, S.J. 2008. Web 2.0: Conceptual foundations and marketing issues. *Journal of Direct, Data and Digital Marketing Practice*. 9, 3 (2008), 231–244.

[18] Constantinides, E. et al. 2008. Social media: A new frontier for retailers?'.*European Retail Research*. 22, (2008), 1–28.

[19] Cooper, R.G. 1993. *Winning at new products: accelerating the process from idea to launch*. Addison-Wesley.

[20] Desouza, K.C. et al. 2008. Customer-driven innovation. *Research-Technology Management*. 51, 3 (2008), 35–44.

[21] Eskelinen, M. 2009. Sosiaalinen media business to business-markkinoinnissa. (2009), 66.

[22] Finch, B.J. 1999. Internet discussions as a source for consumer product customer involvement and quality information: an exploratory study. *Journal of Operations Management*. 17, 5 (1999), 535–556.

[23] Fuller, J. and Matzler, K. 2007. Virtual product experience and customer participation–A chance for customer-centred, really new products.*Technovation*.27, 6-7 (2007), 378–387.

[24] Gassmann, O. 2006. Opening up the innovation process: towards an agenda.*R&D Management*. 36,3 (2006),223–228.

[25] Gersuny, C. and Rosengren, W.I. 1973. *The service society*. Schenkman Pub. Co.

[26] Gillin, P. and Schwartzman, E. 2011. *Social Marketing to the Business Customer: Listen to Your B2B Market, Generate Major Account Leads, and Build Client Relationships*. Wiley.

[27] Goodnoe, E. 2006. *Wikis In The Workplace*.

[28] Granovetter, M. 1983. The strength of weak ties: A network theory revisited. *Sociological theory*. 1, 1 (1983), 201–233.

[29] Greenberg, P. 2010. The impact of CRM 2.0 on customer insight. *Journal of Business & Industrial Marketing*. 25, 6 (2010), 410–419.

[30] Greenberg, P. 2003. A Commonwealth of Self-Interest. *CRM Magazine*.

[31] Hanna, B. 2009. *Business.com's 2009 B2B Social Media Benchmarking Study*.

[32] Hanna, N. et al. 1995. New product development practices in consumer versus business products organizations. *Journal of Product&Brand Management*. 4,1(1995),33–55.

[33] Hart, S. et al. 1999. The effectiveness of market information in enhancing new product success rates. *European Journal of Innovation Management*. 2, 1 (1999), 20–35.

[34] Henriksson, J. and Mikkonen, T. 2008. *Wiki-kokemuksia suomalaisissa organisaatioissa*. Hypermedia Laboratory of Tampere University.

[35] Holt, K. et al. 1984. *Need assessment: a key to user-oriented product innovation*. Wiley, Chichester [Sussex]; New York.

[36] Kamel Boulos, M.N. and Wheeler, S. 2007. The emerging Web 2.0 social software: an enabling suite of sociable technologies in health and health care education1. *Health Information & Libraries Journal*. 24, 1 (2007), 2–23.

[37] Kaplan, A.M. and Haenlein, M. 2010. The early bird catches the news: Nine things you should know about micro-blogging. *Business Horizons*. (2010).

[38] Kaplan, A.M. and Haenlein, M. 2010. The early bird catches the news: Nine things you should know about micro-blogging. *Business Horizons*. 54 (2010), 105-113.

[39] Kaplan, A.M. and Haenlein, M. 2010. Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*. 53, 1 (2010), 59–68.

[40] Kaulio, M.A. 1998. Customer, consumer and user involvement in product development: A framework and a review of selected methods. *Total Quality Management & Business Excellence*. 9, 1 (1998), 141–149.

[41] Kho, N.D. 2008. B2B gets social media. *EContent*. 31, 3 (2008), 26–30.

[42] Kietzmann, J.H. et al. 2011. Social media? Get serious! Understanding the functional building blocks of social media. *Business Horizons*. 54 (2011), 241-251.

[43] Klamma, R. et al. 2007. Watching the blogosphere: Knowledge sharing in the Web 2.0. *International Conference on Weblogs and Social Media* (2007),105–112.

[44] Kohler, T. et al. 2009. Avatar-based innovation: Using virtual worlds for real-world innovation. *Technovation*. 29, 6-7 (2009), 395–407.

[45] Kotler, P. 1996. *Marketing management : analysis, planning, implementation and control*. Prentice Hall ;.

[46] Kärkkäinen, H. 2002. *Customer need assessment: challenges and tools for product innovation in business-to-business organizations*.

[47] Kärkkäinen, H. et al. 2010. Social media use and potential in business-to-business companies' innovation. *Proceedings of the 14th International Academic MindTrek Conference: Envisioning Future Media Environments* (New York, NY, USA, 2010), 228–236.

[48] Latusek, W.P. 2010. B2B relationship marketing analytical support with GBC modeling. *Journal of Business & Industrial Marketing*. 25, 3 (2010), 209–219.

[49] Leary, B. 2008. Social CRM: customer relationship management in the age of the socially-empowered customer. (Scottsdale, 2008), 9.

[50] Lehtimäki, T. et al. 2009. Harnessing web 2.0 for business to business marketing-Literature review and an empirical perspective from Finland. *Faculty of Economics and Business Administration*. 29 (2009), 76.

[51] Lengnick-Hall, C.A. 1996. Customer contributions to quality: a different view of the customer-oriented firm. *The Academy of Management Review*. 21, 3 (1996), 791–824.

[52] Leonard-Barton, D. 1998. *Wellsprings of knowledge: Building and sustaining the sources of innovation*. Harvard Business Press.

[53] Lesser, E. et al. 2000. Managing customer knowledge. *Journal of Business Strategy*. 21, 6 (2000), 34–37.

[54] Levy, M. 2009. WEB 2.0 implications on knowledge management. *Journal of Knowledge Management*. 13, 1 (2009), 120–134.

[55] Luoma, T. et al. 2008. Managing Commercialisation Risks in Innovation Development: Linking Front End and

Commercialisation. *Proceedings of the XIX ISPIM Annual Conference. Open Innovation: Creating Products and Services through Collaboration. Tours, France* (2008), 18.

[56] Malkin, T. 2010. Making Sense of the Chatter - Cracking the Code of Social Media Data Analysis. *Social Media Research*. 48-51.

[57] McAfee, A.P. 2006. Enterprise 2.0: The dawn of emergent collaboration. *Engineering Management Review, IEEE*. 34, 3 (2006), 38–38.

[58] McColl-Kennedy, J.R. et al. 2009. Customers as resource integrators: Styles of customer co-creation. *Naples Forum on Services* (2009), 24.

[59] Menti, M. 2007. Virtually endless possibilities?

[60] Muffatto, M. and Panizzolo, R. 1996. Innovation and product development strategies in the Italian motorcycle industry. *Journal of Product Innovation Management*. 13, 4 (1996), 348–361.

[61] Murphy, G.D. 2010. Using Web 2.0 tools to facilitate knowledge transfer in complex organisational environments: a primer. (2010), 39.

[62] Nambisan, S. 2002. Designing virtual customer environments for new product development: Toward a theory. *The Academy of Management review*. 27, 3 (2002), 392–413.

[63] Nordlund, H. 2009. Constructing Customer Understanding in Front End of Innovation. *University of Tampere, Tampere*. (2009).

[64] Näkki, P. and Antikainen, M. 2008. Online tools for co-design: User involvement through the innovation process. *New Approaches to Requirements Elicitation*. (2008), 96.

[65] Ogrinz, M. 2009. *Mashup Patterns: Designs and Examples for the Modern Enterprise*. Addison-Wesley Professional.

[66] Ondrejka, C. 2005. *Social Science Network: Changing Realities: User Creation, Communication, and Innovation in Digital Worlds*. University of Southern California.

[67] Paroutis, S. and Al Saleh, A. 2009. Determinants of knowledge sharing using Web 2.0 technologies. *Journal of Knowledge Management*. 13, 4 (2009), 52–63.

[68] Payne, A.F. et al. 2008. Managing the co-creation of value. *Journal of the Academy of Marketing Science*. 36, 1 (2008), 83–96.

[69] Piller, F. et al. 2005. Overcoming Mass Confusion: Collaborative Customer Co-Design in Online Communities. *Journal of Computer-Mediated Communication*. 10, 4 (2005), 25.

[70] Prahalad, C.K. and Ramaswamy, V. 2004. Co-creation experiences: The next practice in value creation. *Journal of interactive marketing*. 18, 3 (2004), 5–14.

[71] Prahalad, C.K. et al. 2000. Co-opting customer competence. *Harvard business review*. 78,1 (2000), 79–90.

[72] Prandelli, E. et al. 2006. Diffusion of Web-based product innovation. *California Management Review*. 48,4.109–135.

[73] Read, A. 2000. Determinants of successful organisational innovation: a review of current research. *Journal of Management*. 3, 1 (2000), 95–119.

[74] Ribiere, V.M. and Tuggle, F.D.D. 2010. Fostering innovation with KM 2.0. *VINE*. 40, 1 (2010), 90–101.

[75] Richards, D. 2009. A social software/Web 2.0 approach to collaborative knowledge engineering. *Information Sciences*. 179, 15 (2009), 2515–2523.

[76] Riss, U.V. et al. 2009. What is Organizational Knowledge Maturing and How Can It Be Assessed? *9th International Conference on Knowledge Management (I-KNOW)* (2009), 28–38.

[77] Rollins, M. et al. 2011. Customer information utilization in business-to-business markets: Muddling through process? *Journal of Business Research*. (2011), 7.

[78] Rothwell, R. et al. 1974. SAPPHO updated-project SAPPHO phase II. *Research policy*. 3, 3 (1974), 258–291.

[79] Rowley, J. et al. 2007. Customer community and co-creation: a case study. *Marketing Intelligence & Planning*. 25, 2 (2007), 136–146.

[80] Ruef, M. 2002. Strong ties, weak ties and islands: structural and cultural predictors of organizational innovation. *Industrial and Corporate Change*. 11, 3 (2002), 427.

[81] Röll, M. 2004. Distributed KM-Improving Knowledge Workers' Productivity and Organisational Knowledge Sharing with Weblog-based Personal Publishing. *The European Conference on Weblogs, Vienna* (2004).

[82] Sawhney, M. and Prandelli, E. 2000. Managing Distributed Innovation in Turbulent Markets. *California Management Review*. 42, 4 (2000), 31.

[83] Sawhney, M. et al. 2005. Collaborating to create: The Internet as a platform for customer engagement in product innovation. *Journal of Interactive Marketing*. 19, 4, 4–17.

[84] Schmidt, A. 2005. Knowledge maturing and the continuity of context as a unifying concept for knowledge management and e-learning. *Proceedings of I-Know* Conf.

[85] Schmidt, A. et al. 2009. Conceptual foundations for a service-oriented knowledge and learning architecture: Supporting content, process and ontology maturing. *Networked Knowledge-Networked Media*. (2009), 79–94.

[86] Schneckenberg, D. 2009. Web 2.0 and the empowerment of the knowledge worker. *Journal of Knowledge Management*. 13, 6 (2009), 509–520.

[87] Sigala, M. 2010. eCRM 2.0 applications and trends: The use and perceptions of Greek tourism firms of social networks and intelligence. *Computers in Human Behavior*. (2010), 7.

[88] Singh, T. et al. 2008. Blogging: A new play in your marketing game plan. *BusinessHorizons*. 51,4 (2008),281–292.

[89] Soriano, J. et al. 2007. Fostering innovation in a mashup-oriented enterprise 2.0 collaboration environment. *UK, sai: sisn*. 24, (2007), 62–68.

[90] Srinivasan, R. and Lilien, G. 1999. Leveraging Customer Information for Competitive Advantage. *ISBM Report*. 17, (1999), 42.

[91] Standing, C. and Kiniti, S. 2011. How can organizations use wikis for innovation? *Technovation*. (2011), 9.

[92] Stelzner, M. 2009. *Social media marketing industry*.

[93] Tredinnick, L. 2006. Web 2.0 and business. *Business Information Review*. 23, 4 (2006), 228.

[94] Ulrich, K.T. and Eppinger, S.D. 2000. Product design and development. (2000), 9.

[95] Urban, G.L. et al. 1980. *Design and marketing of new products*. Prentice-Hall.

[96] Webster, F.E. 1995. *Industrial marketing strategy*. John Wiley & Sons Inc.

[97] Verona, G. et al. 2006. Innovation and virtual environments: towards virtual knowledge brokers. *Organization Studies*. 27, 6 (2006), 765.

[98] Von Hippel, E. 2005. *Democratizing innovation*. The MIT Press.

[99] Von Hippel, E. 1988. *The sources of innovation*. Oxford University Press New York.