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Abstract

With the emergence of phenomena like computer supported cooperative work, and especially with user-generated content and Web 2.0, new opportunities for SMEs occurred in order to collaborate on an employees' level. As claimed by open innovation researchers, a heterogeneous group of (external) users can increase a firm's innovative performance. These external users can be found in the form of employees of other firms participating in a SME network. However, especially SMEs are influenced by the founder's personality and his practiced level of control, both in an offline and in an online world. Using a multi-method approach, we focus on CEOs' perceptions of the potentials and pitfalls of Web 2.0 usage for business collaboration among employees of different firms. By providing evidence with a focus on competitive and non-competitive business collaboration mediated by Web 2.0 technologies this research may be considered an important basis for further research in employee creativity, idea generation and open innovation.

Keywords: Open innovation, Web 2.0, Collaboration, Business networks, SMEs, Competition

1 INTRODUCTION

Driven by environmental turbulences, today many companies feel the increasing pressure for ongoing innovation in order to stay competitive. Especially, small and medium sized enterprises (SMEs), which are considered to be the backbone of modern economies as they represent the vast majority of companies (European Commision 2003) seek for ways to face current challenges like globalization, reduced time-to market or demographic change. Although SMEs typically are innovative in nature due to their focus and concentration on specific markets (van de Vrande et al. 2009), they also typically lack of resources and financial capabilities to approach new businesses or to explore new fields. The tension between being innovative on the one hand and being constrained by missing resources and on the other prevents the generation and implementation of ideas for non-technological and non-competitive aspects (Gnyawali and Park 2009).

In order to share resources and to benefit from collaborative knowledge exchange, many SMEs are organized in networks. These networks are either concentrated on specific technologies or branches, or on regional nearness resulting in heterogeneous groups of members (Simmie 2002). In the latter case,

due to a missing technological focus, information and knowledge exchange within these networks occurs very often with regard to work-life balance, collaborative procurement, energy saving or health care – so-called non-competitive areas. However, although open in principle, the majority of information and knowledge exchange activities within these networks is initiated or driven by the CEOs of the participating companies – barely driven by employees (West & Lakhani 2008). Employees on the other hand are valuable resources for idea generation, especially if it is possible to organize them in heterogeneous groups (Amabile & Gryskiewicz 1989, Kratzer et al. 2004, Tierney et al. 1999, Yuan and Woodman 2010).

With the emergence of phenomena like user-generated content and Web 2.0, new opportunities for SMEs and SME networks occurred (Cox et al. 2008, Tredinnick 2006). As a consequence of their private usage, employees are familiar with Web 2.0 applications, have built the trust and are comfortable bringing their private technological expertise even into the corporate context. In particular, they virtually introduce self-organizing behavior instead of hierarchical structures – in that case uncontrolled and undirected by the top management and CEOs. First attempts were made to structure and control such behavior in order to benefit from voluntary online activities of employees, subsumed under the term Enterprise 2.0 (McAfee 2006).

Although the business impact of internal and external usage of Web 2.0 technologies has still to be proven (Stenmark 2008), a consensus of the magnitude of Enterprise 2.0 exists. However, whereas Enterprise 2.0 focuses on the usage of Web 2.0 technologies within one firm and as a means to communicate with suppliers and customers, the intention of this paper is to go a step further and to evaluate the potential and possible barriers of the usage of such technologies not only internally, but across possibly all individuals employed in different firms participating in a SME network.

Therefore, in this paper, we seek to broaden our understanding of open innovation as a collaborative knowledge exchange process not only between users, customers, and *one* firm, but across employees of different firms. As we focus on SMEs, which tend to be influenced by the founder's personality, we specifically ask CEOs and persons in leading positions about how they would control employees' behavior in corporate Web 2.0 contexts in order to exchange knowledge and generate ideas in competitive and especially in non-competitive areas. Using a multi-method approach, we contribute to the research stream by showing that – from a CEO's perspective – although many firms are aware of the potential of collaborative knowledge sharing through Web 2.0, SMEs still perceive impediments to let employees exchange information freely – and therefore fail to benefit from the entire creative potential of the sum of all employees.

2 CONCEPTUAL BACKGROUND AND DRIVING PHENOMENA

2.1 Open innovation and idea generation

As discussed in recent years, companies, and especially SMEs, increasingly seek to integrate external knowledge and resources by opening the boundaries of the firm to external parties (Chiaroni et al. 2010, Enkel et al. 2009). This trend is referred to as *Open Innovation*, meaning that companies use internal *and* external sources to generate innovations in products and services (Chesbrough 2003a). Many researchers long treated open innovation as the integration of users and customers in the innovation process (cf. Bogers et al. 2010, Dahlander and Gann 2010, Keupp and Gassmann 2009, von Hippel 2005). Only few investigations consider the potential of integrating other firms (apart from literature on strategic alliances), and, to our knowledge, barely the integration of knowledge of *employees of other firms* in order to generate ideas and innovative solutions.

However, innovation, as a term, is always related to the adoption of ideas and idea implementation with the aim to bring it to market (van de Ven 1986). In contrast, creativity and idea generation is mostly defined as the production of novel and useful ideas, processes, products or services by a person or group (c.f. Woodman et al. 1993, Oldham and Cummings 1996) – ignoring market potential at an

early stage. Therefore, although creativity can be seen as the starting point for innovations, the term innovation is misleading for ideas in non-competitive areas due to a missing possible market.

For this study, we therefore prefer the term *open idea generation* as a hybrid between open innovation and idea generation. As discussed, the term innovation is restricted by market orientation and mostly used for primary activities according to Porter (1985). When we talk about idea generation instead, these ideas do not have necessarily to contribute to a corporate's value generation directly. Moreover, many ideas are just related to improvements for daily life problems like work-life balance. From a conceptual point of view, as generated ideas of this kind have no direct influence on a firm's value proposition, collaboration between actors is likely to occur even if two firms are competing in a market. This coexistence of collaboration and competition at the same time is called *coopetition* (Brandenburger and Nalebuff 1996). In other words, collaboration takes place "far away from the customer" and competition is kept "near the customer" (Kotzab and Teller 2003, p.279).

2.2 Web 2.0 and business collaboration

Generally speaking, Web 2.0 applications are mainly describing applications that are empowering users to create content, share this content with anyone they invite and add new contacts to their virtual social network which finally ends in the creation of online communities (West and Lakhani 2008). Although the decimal point implies a discrete upgrade, Web 2.0 is not a homogenous technology (Millard and Ross 2006). Moreover, it is an empirical phenomenon which is driven by an innovative mix of technologies and attitudes, not an analytical concept. However, as Web 2.0 stands for a shift from a clear distinction between content provider and content user, classical role perceptions are turned upside down.

As discussed, firms can collaborate and compete at the same time (Kotzab and Teller 2003, Madhavan et al. 2004). Consequently, an ICT support as suggested by Web 2.0 promoters can address either kind of activity. However, well-known and accepted protection mechanisms like patenting or IP protection which work in "the old world" are not applicable in a Web 2.0 world due to its open nature. Collaboration in the form of information and knowledge exchange between employees of different firms therefore is most likely to occur for non-competitive areas.

In either case, management of a SME has several options to confront with the phenomenon of Web 2.0 in a business context. Stenmark (2008) differentiates between passive and active management on the one hand, and obstructive and supportive management on the other. The combination of these management styles lead to four approaches where the use of Web 2.0 applications in a business context is (1) implicitly allowed, but not actively encouraged, (2) Web 2.0 usage is actively promoted, (3) Web 2.0 applications are denied, but not actively obstructed, and (4) management actively prohibits Web 2.0 usage in corporate contexts.

Usually, the chosen management approach is linked to an overall collaboration style of a firm. Pisano and Verganti (2008) promote a framework considering open vs. closed participation and hierarchical vs. flat governance. In the case of heterogeneous SME networks based on regional nearness, the majority of firms is addicted to hierarchical structures and relatively closed innovation approaches. The introduction of Web 2.0 applications in a corporate context therefore inherents the tension between creating an open and collaboration-friendly environment on the one side and not being adopted or even being actively blocked on the other (management approach 4). To reach the intended aim, namely to get access to explicit and non-explicit information and knowledge of non-hierarchical communities through Web 2.0 technologies and therefore promote collaboration between employees, many firms have to perform a transition towards an open flat collaboration mode (Pisano and Verganti 2008), and therefore have o change their perception and execution of control (Ouchi 1979).

2.3 Hypotheses

As discussed, the integration of employees' knowledge from more than one firm and its exchange within a network in order to generate ideas can be seen as an open innovation approach. Hereby, knowledge related to a certain technology or product is often the basement of a firm's core business and the information or knowledge owner is most likely to protect it, e.g. through patenting or intellectual property regimes (Chesbrough 2003b). In contrast, people may tend to exchange information and knowledge not related to a firm's business quite unguarded, like in the case of user-generated content and Web 2.0 (van Dijck 2009).

Given the heterogeneous nature of a SME network based on regional nearness, if information and knowledge are exchanged, this knowledge is usually not directly transferable in innovative solutions. Moreover, it is most likely that information and knowledge sharing occurs in areas not directly related to a specific business, e.g. in questions of health care or energy saving. Based on this distinction, we adopt Porter's (1985) differentiation between and primary and secondary activities to distinguish between competitive and non-competitive areas. We assume that if there is a perceived need for collaboration in either area, firms are likely to promote information and knowledge exchange among employees on a Web 2.0 platform. We therefore hypothesize that the level of volitional information and knowledge exchange rises with a need for collaboration, regardless if for primary or secondary activities.

Hypothesis 1a:

The perceived need for collaboration in competitive areas has a positive impact on the willingness to let employees exchange knowledge across firm boundaries.

Hypothesis 1b:

The perceived need for collaboration in non-competitive areas has a positive impact on the willingness to let employees exchange knowledge across firm boundaries.

As discussed in the introduction, SMEs are influenced by a founder's personality and usually by hierarchical structures. Therefore, nearly no (important) decision will be made without integrating a CEO (Song and Thakor 2006). From a CEO's perspective, to let employees exchange their knowledge via a technological platform raises certain questions of trust. First, in the case of information not related to a firm's business, a firm is not the owner of information and knowledge per se and is therefore unable to protect (valuable) knowledge (Arya et al. 1997). Second, as the experiences with Web and Enterprise 2.0 further show, bottom-up information and knowledge exchange among employees of different firms only occurs if management limits its influence on employee behaviour (Stenmark 2008). However, as revealed from our qualitative interviews (see section 3.3), especially SMEs find it difficult to disengage and to reduce its practiced level of control. As this seems to be a general aspect when dealing with SMEs, we assume that there is no difference between the required levels of control for a Web 2.0 platform neither with regard to competitive nor with regard to non-competitive areas.

Hypothesis 2a:

The perceived need for collaboration in competitive areas affects the required level of online control.

Hypothesis 2b:

The perceived need for collaboration in non-competitive areas affects the requested level of online control.

Control itself is a construct, which is very precisely defined (Kirsch et al. 2010, Snell 1992). The execution of control consequently varies with the objective which has to be controlled. For instance, Ouchi (1979), who treats control as a problem of information flows, distinguishes between market, bureaucracy and clan control, while "*markets deal with the control problem through their ability to precisely measure and reward individual contributions; bureaucracies rely instead upon a mixture of*

close evaluation with a socialized acceptance of common objectives; and clans rely upon a relatively complete socialization process which effectively eliminates goal incongruence between individuals." (p.833). If this concept is applied to our research objective, namely the information and knowledge exchange activities of SMEs' employees on an open Web 2.0 platform, SMEs have to manage the transition from a centralized bureaucratic approach to what Ouchi (1979) names clan control when turning in an online world. However, as we still focus on a CEO's perspective, we assume that although necessary, this transition is hindered by existing corporate cultures. If a CEO considers a designated level of control as necessary in an offline world, it is most likely that he demands the same level of control in the online world. We therefore hypothesize:

Hypothesis 3:

The requested level of offline control affects the requested level of online control.

3 EMPIRICAL ANALYSIS

3.1 Research context

The "WirtschaftsForum Neuwied e.V.", the context of our study, is a regional network of SMEs in the north of Rhineland-Palatinate in Germany that consists of roughly 120 SMEs employing about 10,000 workers. It was founded in 2002 and comprises companies primarily from the industry and business sector in the surrounding area of Neuwied. The SME-network is heterogeneous in structure regarding respective size of the cooperating companies, represented branches, products and services and technological affinity. The collaboration within the network is focused on non-competitive activities and aims at fostering knowledge transfer between its members. In this regard it is facing challenges and problems generally related to SMEs (Street and Cameron 2007, Grotz and Braun 1993).

The management of SMEs is highly influenced by the personality of the owners and their attitude towards doing business. Joining a network is usually decided on the executives' level only, while employees are barely integrated into the collaborative work. IT is not yet widely implemented. Within the "WirtschaftsForum Neuwied e.V." many cooperating partners are hardly using IT, while others maintain a sophisticated internet-based IT infrastructure.

3.2 Research approach

We followed a multi-method approach considering elements of action research, design science and behaviorism. Whereas bahaviorism is the dominating paradigm in IS research and addicted to empirical investigations with the aim of describing the nature of reality (Baskerville and Myers 1999, Frank 2006, Niehaves 2005), design science "creates and evaluates IT artifacts intended to solve identified organizational problems" (Hevner et al. 2004, p. 77) and in action research the researcher even becomes part of a project team and is able to study the object of research in detail (Avison et al. 1999, Järvinen 2007, Susman and Evered 1978). A combination of these approaches therefore simultaneously benefits from observations and its empirical representation as well as from initiating and creating phenomena which otherwise are difficult to find in reality.

Following common practice in qualitative research we first conducted interviews in person, with chosen representatives in order to examine different perceptions of innovation processes in different disciplines and collaboration as well as the perceived benefits of collaborative ICT and Web 2.0 support. An interview guide was used, but mostly the interviews were led freely. We ended up interviewing seven representatives (mostly CEOs) of six SMEs participating in the SME network in a first round and additional eight representatives in a second phase. Every interview lasted between 60 and 75 minutes. All the interviews were transcribed and content analysis was applied to identify recurring themes in the interview transcripts (cf. van Maanan 1998). The content analysis was computer supported by the software Maxqda and a relational database.

We then developed a technical prototype (a simplified Web 2.0 platform) with limited functionalities like search and micro-blogging, based on requirements we derived from iterative interviews and workshop sessions with selected CEOs of firms active in the SME network (Blinn et al. 2009). While common in design research and important to improve the technical artifact, we did not evaluate the technological prototype itself. However, we needed the prototype to demonstrate certain functionalities especially to those who are not Internet and Web 2.0 affine. After participating in workshops and/or testing the platform alone the majority of the CEOs attested their confidence in the new technological options.

With the workshop experiences in mind and a clear imagination of how employees could use a future platform with enriched functionalities, representatives of the firms were primed to participate in a survey we sent out to each of the 115 member firms of the Wirtschaftsforum Neuwied e.V. either by mail or as a online survey with a unique key for each firm. We then conducted a survey asking not only the CEOs participating in interviews and workshops but all CEOs and persons in leading positions in firms which are member of the SME network.

3.3 Research findings

Qualitative results

Throughout all interviews with CEOs and people in leading positions, scepticism towards Web 2.0 was perceptible. Especially if we asked how they would feel, if employees could freely – and mostly unattached by management – exchange knowledge on a Web 2.0 platform, we noticed upcoming barriers. Many interviewees reported that they see a big difference between posting on a Website in a private life and posting with a clear observable affiliation to a certain firm. Furthermore, the majority of interviewees disbelieves that the exchange between employees of different firms is of value.

In addition, an (intense) exchange on CEO level already exists which makes an exchange on employee level - in a CEO's point of view - obsolete.

"We know each other, we meet in person"

Interviewee #4 (Auditing)

Another important issue is the scepticism towards Web 2.0 usage. Although not intended, most CEOs share the perception of Web 2.0 as something their employees have to do during their work time and all day long.

"I don't want my employees to chat all day"

Interviewee #7 (Service, ICT sector)

"When should my employees work on that? We build houses!"

Interviewee #11 (Construction)

During our workshops we then had to focus on showing that many people, and also employees of participating firms, tend to use Web 2.0 applications anyway – especially in their free time. We then received support by one participating CEO who admitted:

"Nearly all of our employees are active on social networking sites"

Interviwee #2 (Service, Gym operator)

As already described, the intension of the workshops was to generate awareness for the Web 2.0 phenomenon and its potential for information and knowledge exchange between SMEs. Although not transcribed and therefore implicit, we had the impression that the scepticism towards Web 2.0 in an SME environment was reduced during the workshops. However, we had to wait until all CEOs met in person again in order to give them the chance to exchange their experiences gained within the workshops before we sent out a questionnaire to all firms participating within the Wirtschaftsforum Neuwied.

Quantitative results

We received 59 answers from CEOs and persons in leading positions from 59 different firms. It's worth noting that, not uncommon for CEO surveys, the average age for the respondents lies between 46-55 years. With regard to the firm as the level of analysis, we had a response rate of 51.3%. For the majority of our questions we used 4-point-likert scales. Although uncommon in scientific research and hard to interpret due to a missing natural mean, this was our (justifiable) concession to the representatives of the Wirtschaftsforum Neuwied e.V. who wanted to have 4-point-scales for the purpose of clear positioning. Nearly all respondents were senior managers; specifically 62.7% of the questionnairs represented responses by CEOs, 25.4% by persons in leading positions and only 11.9% of the respondents performed other functions in the company. The distribution of companies according to their size balanced for those with 21 or more employees, but concentrated on small enterprises with fewer than 20 employees (59.3%). Furthermore, of these firms, the largest proportion represented the service sector (n=28, 47.4% of the sample), followed by handcraft and accounting (n=5, each), which further illustrates the diversification of the investigated SME network.

With regard to a firm's technological prerequisites, 50 firms provide internet access at each workplace and 53 own a website. However, as a first result we observe a difference in the volitional ICT usage behaviour for employees. We asked the interviewees how they would let their employees use a Web 2.0 platform for information seeking, providing, and sharing. Not surprisingly, we observe a clear priority for information seeking. A mean comparison further shows that e.g. waste management and construction would, in principle, share and exchange information, but at the same time hesitate with regard to information providing (Table 1). There might be several reasons. First, the core business of those branches is too far from ICT and necessary technological knowledge is either not available or is too expensive to develop. Second, as the core business is proceeded mainly afield and outside corporates' walls it also might be simply a question of missing resources. Surprisingly, a mean comparison on firm sizes illustrates that especially bigger firms with more than 100 employees tend to be sceptical to let employees exchange information and knowledge on a Web 2.0 platform.

Firm type	Information seeking	Information providing	Information sharing	N
Information technology	4.00	3.00	3.00	3
Logistics	4.00	4.00	4.00	1
Production	4.00	2.00	2.00	3
Chancellery / Tax audit /Accounting	3.80	3.50	2.25	5
Waste management	4.00	1.67	2.33	3
Construction / Handcraft	3.80	1.60	2.80	5
Service	4.00	2.48	2.74	28
Other	4.00	3.13	2.29	8

Table 1 Comparison of CEOs wish for web 2.0 usage among employees

Firm Size	Information seeking	Information providing	Information sharing	N
Under 5	3.94 (.236)	2.82 (.883)	2.53 (.943)	18
6-20	3.94 (.250)	2.44 (1.263)	3.07 (.799)	16
21-50	4.00 (.000)	2.71 (1.113)	3.00 (.816)	7
51-100	4.00 (.000)	3.00 (1.000)	2.43 (.787)	7
101-500	4.00 (.000)	1.67 (.500)	1.89 (.601)	9

Table 2 Comparison of CEOs wish for web 2.0 usage among employees

As we differentiate between primary and secondary activities (Porter 1985)[1], we then asked the interviewees "to what extent do you perceive a need for collaboration within the network" in the following areas: Idea generation, leadership and human resources, environment, health care, energy, work-life balance, procurement. Before testing our hypotheses, we estimated a confirmatory factor analysis (CFA) to test the appropriability of our measures for primary (competitive) and secondary (non-competitive) activities. As we started our research we treated questions on e.g. collective apprenticeships as a non-competitive activity. However, to our surprise, leadership and human resources was classified as a primary activity honouring the strategic focus of this activity. Our two factors finally comprise two (perceived need for collaboration in competitive areas) and five (perceived need for collaboration in non-competitive areas) items (Table 3). The reliability, measured by Cronbach's α, exceeds the recommended threshold of 0.70 for factor 2 and misses it slightly for factor 1 with α=0.673.

	Cronbach's α / factor loading
Factor 1: Perceived need for collaboration in competitive areas	$\alpha = 0.673$
Idea generation	0.719
Leadership and human resources	0.858
Factor 2: Perceived need for collaboration in non-competitive areas	$\alpha = 0.796$
Environment	0.834
Health care	0.803
Energy	0.802
Work-Life Balance	0.661
Procurement	0.613

Table 3 Confirmatory factor analysis

Our focus on the perception of information and knowledge exchange required the ascertainment of additional variables. Although not directly related to our formulated hypothesis, we were interested in a firm's general willingness to open to external parties and a firm's general expectation of collaboration with third parties. The perceived benefit from collaboration (Collaboration) was measured by three items like "I generally profit from collaboration", with α=0.781. Openness towards external parties (Openness) was also measured with three items like "I am open to broaden my horizon" with α=0.681. The construct for online control included items like "I would let my employees use the platform if we define explicit rules for collaboration"; for offline control "Collaboration will occur only, if we define certain rules", respectively. Online and offline control were measured by three items each with a α = 0.719 for online control and α = 0.696 for offline control. Firm size was coded as a number between one and six with one for firms with under five employees and six for those with more than 100 people employed. The interviews and workshops further revealed that the observed SMEs increasingly seek to get in touch with possible future customers via websites. As this is considered to be less interactive compared to the Web 2.0 phenomenon, we decided to differentiate between information seeking, providing, and exchanging, with the latter being the most advanced stage. All three variables are measured by simply asking "to what extent do you want your employees to be active in information [seeking|providing|exchanging]".

[1] Our categorization of what competitive and non-competitive is, is only adopted from Porter's (1985) value chain, not identical with it.

Variables	M	S.D.	1	2	3	4	5	6	7	8	9
1 Non-competitive	2.815	.6883									
2 Competitive	3.112	.6664	.122								
3 Collaboration	2.853	.6646	.375**	.281*							
4 Openness	3.234	.4959	.147	.065	.245						
5 Control online	2.937	.7139	.357*	-.028	.280*	.238					
6 Control offline	3.229	.5119	.079	.250	.306*	.300*	.241				
7 Firm size	2.710	1.7420	-.085	-.220	-.241	-.047	-.097	.117			
8 Inf. seeking	3.970	.1840	-.238	-.181	-.182	.063	-.012	-.298*	.133		
9 Inf. providing	2.560	1.0690	.143	.040	.150	.083	.201	-.072	-.239	.101	
10 Inf. exchange	2.640	.9030	.021	.290*	.205	-.142	.129	.016	-.246	.138	.319*

*p<.05; **p<.01; ***p<.001

Table 4 Descriptive statistics and correlations

Model Dependent variable	Model 1A Information providing	Model 1B Information exchange	Model 2A Information providing	Model 2B Information exchange	Model 3 Online control
Non-competitive	-.036	.306*	-.031	.288*	-.161
Competitive	.125	.016	.113	.056	.331*
Collaboration	.011	.190	.027	.197	.048
Openness	-.004	-.239*	-.002	-.233*	.066
Control online	.138	.119			
Control offline	-.101	-.038			.225×
Firm Size	-.151	-.178	-.201	-.196	-.065
R^2	.086	.248	.058	.247	.204
Number of observations	59	59	59	59	59

×p<.10 *p<.05 **p<.01 ***p<.001; unstandardized coefficients

Table 5 Ordinary least square regression results

Table 4 shows the descriptive results and correlations. Obviously, the need for collaboration in competitive areas is perceived as more urgent (mean of 3.112 for competitive, and 2.815 for non-competitive on a 4-point scale). Interestingly, the mean for offline control is higher than the one for online control reflecting the increased awareness of CEOs for the potential of online collaboration among employees.

In model 1A and 2A in table 5, information providing is used as the dependent variable. The difference between these two models is the consideration of control measures. In neither case a significant relation could be observed. Model 1B and 2B show a significant positive relation between *perceived need for collaboration in non-competitive areas* and *information exchange*, supporting hypothesis 1b. In contrast, as there is no significant relation between *perceived need for collaboration in competitive areas and information exchange* and *information exchange*, we have to reject hypothesis 1a. Surprisingly, openness has a negative effect on information exchange, indicating that the comparably low α for openness leads to a worse fit.

In model 3, online control is the dependent variable. The data show a significant and positive effect of c*ompetitive* and moderately significant effects for *control offline*. We therefore find arguments to support hypotheses 2a and 3. In contrast, *non-competitive* has a non-significant and even negative impact on *control online* resulting in a rejection of hypothesis 2b.

4 DISCUSSION AND CONCLUSION

The aim of the paper was to analyze how CEOs of firms embedded in regional SME networks think about Web 2.0 usage in a business environment in general, and how they would control employees' behaviour in information and knowledge exchange scenarios. The qualitative results indicate general scepticism towards Web 2.0 usage among employees of different firms. By applying a multi-method research approach we were able to establish awareness for the potential of Web 2.0 for SMEs through workshops and a first prototype with limited functionalities. The following empirical study has shown that the willingness to let employees share their information and knowledge throughout the network is significant for non-competitive areas, and not observable for competitive areas. Therefore, although a general need for collaboration in competitive areas was expressed, the required level of trust to let employees share their knowledge freely is (yet) not there for IP related issues. Consequently, the level of online control is affected by the perceived need to work in competitive areas. Both relationships show that CEOs still share the wish to retain control over what is going on on a Web 2.0 platform. As the required level of control is not affected by the perceived need for collaboration in non-competitive areas, the prerequisite for open collaborative idea generation across different SMEs is given. However, future work has to prove, if quality and quantity of generated ideas legitimate the effort in building a Web 2.0 infrastructure for a network.

However, some limitations of this study are worth noting. First, although many CEOs participated in our workshops and had time to experiment with the Web 2.0 prototype, we were not able to guarantee if all respondents have an identical perception of what a future information and knowledge exchange among employees could look like. In addition, some of our constructs are showing limited α values and have to be re-validated in future studies. Furthermore, as stated, we used 4-point-lickert scales in most cases accepting possible disadvantages in data analysis.

The next steps require motivating employees to actively use an (enlarged) prototype version in order to study their behaviour and idea generation processes in detail. As some CEOs still have to be convinced to allow their employees Web 2.0 usage, the level of action research has to be increased. Finally, by providing evidence with a focus on competitive and non-competitive business collaboration mediated by Web 2.0 technologies, this research may be considered an important basis for further research in employee creativity, idea generation and open innovation. Thus, there are great opportunities for further conceptual and empirical research into these topics.

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