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# **27. SELF-DIRECTED CREATIVITY IN WEB 2.0-BASED ONLINE COMMUNITIES: RESEARCH MODEL AND EXPLORATORY STUDY**

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## ***Abstract***

Web 2.0-based online communities - and social networking platforms in particular - are enabling users to create their own content, share this content with anyone they invite and organize connections with existing or new online contacts. The underlying processes are self-directed and represent a valuable source for creativity and innovation – especially outside firms' boundaries. The basis for our research in progress is a framework which focuses on the relations between intrinsic motivation, creativity and Web 2.0-based online communities or social networking platforms. First results of our exploratory empirical investigation of a specific social networking platform suggest that our two propositions are valid.

## ***Keywords***

Online Communities, Creativity, Web 2.0, Social Networking Platforms

## **1. Introduction**

Online communities as well as social networking platforms are often mentioned together with the Web 2.0 phenomenon. In contrast to Web 1.0, where information was indeed available, but mainly centralized and only laboriously editable, Web 2.0 is about people and content (O'Reilly 2005). Within Web 2.0 users can host their own website, comment on articles, stay in touch with peers by using messaging tools, and therefore simply generate content and make it accessible for others. Overall, today users are no longer only consumers; increasingly they become also producers of what they consume, which is a very promising trend for both practitioners and scientists in several research areas (see e.g. Von Hippel 2005, Piller & Walcher 2006, Kollmann & Stöckmann 2007). In this context, 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. A lot of people are therefore familiar with Web 2.0 applications, have built the trust and are comfortable bringing their private social software experience even into the corporate context (Kollmann & Stöckmann 2007).

As needed innovative knowledge is oftentimes not readily available in the organizational knowledge base, firms are explicitly searching for knowledge and innovative ideas from outside the corporate boundaries. One way for companies to enlarge their internal knowledge base is opening their innovation processes for external sources (e.g. Nambisan 2002, Laursen & Salter 2006, Piller & Walcher 2006, Lakhani et al. 2007). In theory, these external sources

are customers, suppliers, universities and even competitors (Chesbrough 2003, West et al. 2006). In praxis, according to the profit orientation of suppliers or competitors, firms primarily make use of R&D cooperation or vertical integration to avoid risks (Arranz & de Arroyabe 2008). Apart from writings on R&D alliances and open source software, articles on inter-firm open innovation in the sense of Chesbrough (2003) are rarely to be found (West & Gallagher 2006).

Given this background it is not surprising that foremost the role of customers in the innovation process was investigated (von Hippel 2005, Sleeswijk Visser et al. 2007). With regard to the Web 2.0 phenomenon, the corporate boundaries are becoming more permeable (Miller et al. 2007) due to the fact that many social software applications are accessible to people from outside a corporation which results in an ongoing process of merging the employees' corporate worlds with their private lives. Through using instant messaging tools for example, employees can be contacted by colleagues as well as by friends or other related persons (Heim 1999) and the contact lists of social networking platforms therefore include peers from the private environment as well as colleagues and business partners. Therefore, in recent years further research has been done on how technologies – and internet technologies in particular – can deepen the relationship between creative customers and companies (Sawhney et al. 2005, Piller & Walcher 2006, and, Von Hippel & Katz, 2002). Considering the innovation process, co-development between firms and innovative customers affects several sub-areas like communication (Kivimäki et al. 2000), intrinsic motivation (Scott & Bruce 1994, Amabile et al. 1996, Roberts et al. 2006, Dewett 2007) and technology (Patrakasol & Olson 2007). However, although a huge body of literature is dealing with the role of customers, especially in the sense of user generated content, “non-firm actors such as communities are rarely to be found in the recent writings on open innovation” (West & Lakhani 2008: 223). Therefore, it is worth to investigate the role of communities in open innovation processes. According to Cropley (2006) we see creativity as a first step in new product development processes – in our case undirected by management. We contribute to this research topic by concentrating on the emergence of creativity within online communities through the usage of social software or Web 2.0 applications. Although we deliver implications for management, the explicit role of a company is to a lesser degree important for our study.

The objective of our article therefore is to investigate if and how Web 2.0 applications (here social networking platforms in particular) – as a gate to both, internal and external sources – can enable the emergence of creativity and innovative ideas. Admittedly, due to missing research in this specific area our research design is highly exploratory.

In the following we will first give a short overview on Social Networking Platforms. Secondly, we will discuss the relationships between intrinsic motivation, creativity and social software applications on an organizational level which lead to our research framework and two related propositions. Thirdly, we present first results of an empirical study investigating user behavior and their perceived creativity by using the social networking platform “StudiVZ.net”. Our findings are only a first step to prove our propositions and are therefore only an indicator rather than evidence. As we said, the investigation is highly exploratory in nature, but even to that early point the results are showing the legitimacy for further research in this unexplored territory.

## **2. Social Networking Platforms and Online Communities**

Social software application is a widely used term which includes blogs, wikis and instant messaging tools as well as social networking platforms (Lee et al. 2006, Von Kortzfleisch et al. 2007). The latter foster the design and maintenance of private and corporate relationships on the Internet. Most famous are, besides MySpace, Orkut or Friendster, platforms to support the networking for professional aims like Xing, LinkedIn, aSmallWorld, or content specific aims like StudiVZ, facebook or wer-kennt-wen. Users can administrate their contacts, win new contacts and establish a social network of friends, colleagues or (potential) business partners depending on the platform type (Wasko & Faray 2005). Moreover, in contrast to content-driven communities (Xing for business contacts, facebook.com for students) new content-agnostic platforms like wer-kennt-wen appear with the aim to reach people of all ages and interests just because of the platform itself, disregarding people's specific tendencies. These virtual communities, or online communities respectively, are profiting from increased reachability. Therefore, new social networks could occur, which never could be built in real life due to regional distance or problems in identifying and maintaining relationships (Cyganski & Hass 2007). In addition, social networking platforms have to be divided into two types according to their underlying business model. On the one side, there are open systems, where people can subscribe without any restrictions and can interact with mates immediately. On the other side, there are more closed systems which require an invitation from other users, a confirmation by the provider or the user simply has to pay a fee. In both cases the platform operator wants to establish a high level of platform usage to generate the required revenue (Kollmann & Stöckmann 2007). However, both types of platforms – in case they are managed successfully – are leading to groups of people sharing information, ideas and knowledge to certain topics and are forming online communities.

Consequently, every type of the above mentioned social software applications is in a specific way linked to the defining criteria of Web 2.0: user generated content and/or user-driven interactivity. A lot of research has been conducted about the role of users/customers in generating innovation (see foremost Von Hippel 2005) and many of these studies are dealing with Internet users in particular (see Harhoff et al. 2003, Sawhney et al. 2005, Piller & Walcher 2006, Wu et al. 2007, Dahlander et al. 2008).<sup>1</sup>

Therefore, the following literature review on creativity and Web 2.0 is general in nature, but leads to the source of our investigation, the networking portal StudiVz.net, which is called to be a copy of the American platform Facebook ([www.facebook.com](http://www.facebook.com)) and addresses first and foremost German speaking students.

## **3. Idea Generation in Social Networks**

### **3.1 Intrinsic Motivation and Creativity**

Research about creativity is mainly focused on organizational settings and has shown that intrinsic motivation is positive related to employee creativity (Amabile 1985, Amabile & Gryskiewicz 1989, Tierney et al. 1999, Ryan & Deci 2000, Dewett 2007). Typically, these studies concentrated on employees in a traditional R&D environment, i.e. embedded in a hierarchical organizational structure. On the contrary, with Web 2.0 applications finding their way into the corporate world (simply through employees who are using social software in

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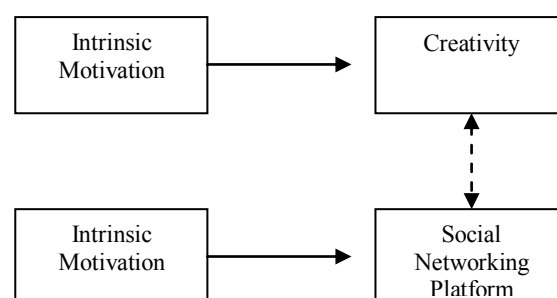
<sup>1</sup> Here we consider open source software programmers as a special kind of Internet users.

their private lives) new opportunities for knowledge creation and sharing are bubbling up – in that case uncontrolled and undirected by the top management. In particular, when people are bringing their experiences with Web 2.0 applications into the corporate context they virtually introduce self-organizing behavior instead of hierarchical structures.

Looking at research on Web 2.0 applications and user generated content, intrinsic motivation is also a determinant in case of voluntary engagement in knowledge sharing and idea generation. Although people can benefit from extrinsic incentives by freely revealing their information (Harhoff et al. 2003), most studies dealing with motives for participating on Web 2.0 platforms point to intrinsic motivation as the core driver. Evidence could be derived from observations of general knowledge sharing behavior (Remedios & Boreham 2004, Wasko & Faraj 2005) and within open source software (OSS) development settings (Shah 2006, Wu et al. 2007, Bitzer et al. 2007).

The latter all agree on intrinsic motivation as the main reason to participate in OSS development projects. An exception is provided by Roberts et al. (2006) who highlight intrinsic motivation as being only one important out of several other factors.

To sum up, intrinsic motivation which is known to be positively related to employee creativity – at least in a traditional organizational environment – is therefore supposed to enforce creativity even more in a non-hierarchical, i.e. self-organizing user-centric knowledge and content generating structure like a Web 2.0 environment. Still, the impact of Web 2.0 applications on creative behavior is unexplored (see figure 1).



**Figure 1:** The relation between intrinsic motivation, creativity and social networking platforms. The continuous arrows represent well explored interactions; the dashed arrow refers to unexplored territory.

### 3.2 Web 2.0 Implications on Creativity and Innovation

Creativity is mostly defined as the production of novel and useful ideas, processes, or products by a person or group (e.g. Woodman et al. 1993, Oldham & Cummings 1996) whereas innovation is related to the adoption of ideas and idea implementation (Van De Ven 1986). Therefore, creativity can be seen as the starting point for innovations (Van Dijk & Van den Ende 2002, Cropley 2006). Both, the creative process and the innovation process are often described as stage-based processes (see Parnes 1992, Tassoul & Buijs 2007 and Tidd et al. 2005, Crawford & Di Benedetto 2005, respectively). Following this perspective, idea generation is only one stage of a multistage process (Scott & Bruce 1994).

Looking at the creative process only, further research has shown that each phase can be divided into a divergent and a convergent part (Parnes 1992, Tassoul & Buijs 2007). During a

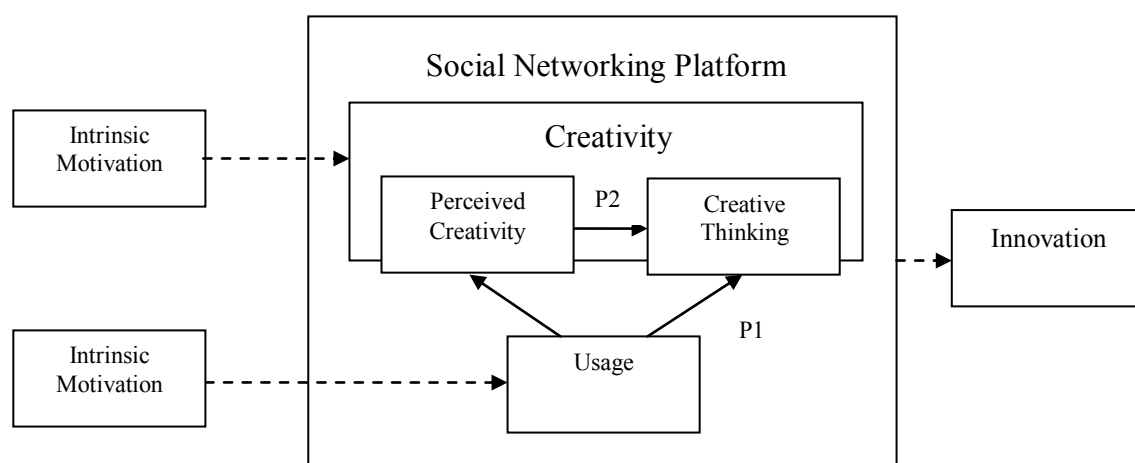
divergent phase, one is thinking about a great number of alternatives concerning the problem, the criteria or implementation. In a second and convergent phase of evaluating and selecting alternatives the number of ideas is decreasing. Furthermore, passing the stages an individual “seeks sponsorship for an idea and attempts to build a coalition of supporters for it” (Scott & Bruce 1994, p.582).

However, building a coalition needs communication which is called to be a determinant of organizational innovation (Kivimäki et al. 2000). From a firm’s point of view both, external and internal communication are important for the innovative performance (Chesbrough 2003), but it is also empirically explored that interaction predicts innovativeness less strongly than collaboration (Kahn 1996). Web 2.0, which is about communication per se, points in a lesser degree to collaboration because it is rather used to share social content than to actually work together. Again, the term Web 2.0 is not clearly defined and some applications are designed and used to collaborate as well, but more often and especially in the case of StudiVz.net, Web 2.0 is just about user interaction which overall leads to our first proposition (see also figure 2):

*P1: The intensity to interactively deal with Social Networking Platforms has no significant impact on the creative outcome (social interactivity does not drive creative behavior).*

This exploratory study was designed to explicitly ask for perceived creativity and potentially enabled creative thinking in social software application environments. Since intrinsic motivation is most likely positive related to creativity in Web 2.0 applications and additionally traditional organizational parameters like “autonomy” become obsolete in self-organizing settings, the content itself becomes the driving factor for creativity. The related proposition with regard to the driving parameter for creativity in social software applications is stated as follows (see also figure 2):

*P2: The merrier users perceive the content of social networking platforms as being creative, the more they are likely to be motivated to start thinking about creative ideas themselves (creative content drives creative behavior).*



**Figure 2:** The conceptual framework. The continuous arrows represent our propositions whereas the dashed arrows refer to possible implications not considered in this study.

In reference to the two basic propositions, we see the following study as a first exploratory step to answer the question if Web 2.0 applications can enhance creativity and innovation. In principle, in order to explore the impact of social software applications on innovative knowledge sharing and idea generation, the respective application systems described further above need to be analyzed separately. There are too many differences between the systems with regard to the degree of interactivity, average response time, and user effort, for example. In the following empirical study we focus on and examine the usage of a social networking platform called StudiVz and its impact on creativity because this platform offers a high degree of potential interactivity and related (potentially creative) knowledge sharing and creativity in comparison with other Web 2.0 applications so far.

## **4. Empirical Results**

### **4.1 Objective of investigation**

Given the fact that intrinsic motivation and collaboration are important determinants for creativity, this exploratory study only concentrates on creative behavior and interactivity. To be specifically clear, in this first step our focus is not to show any direct relation between intrinsic motivation, creativity and innovation in a Web 2.0 environment. Rather, in reference to our propositions the goal is to examine how the usage of a specific Web 2.0 application is impacting people's creativity on a broader level. Therefore we are not measuring intrinsic motivation in our investigation.

The starting point for this research was the German social networking platform StudiVz ([www.studivz.net](http://www.studivz.net)). StudiVz is called to be a copy of the American networking platform Facebook ([www.facebook.com](http://www.facebook.com)). Students are signing-up to this platform by using their email address and a password. Logged on, they can work on their profile by editing their pictures, their addresses, their subjects, their interests and even their relationship status. According to the operator's statement, more than 9 million people are currently enrolled<sup>2</sup>. Due to the success of this platform and the limited abilities to control every single profile and its origin, the participants are not only students anymore and the platform is open to all types of users. Furthermore, more than six billion page impressions and 390 million visits in June 2008 (IVW Online, 2008) make StudiVz to be one of the most visited web sites in the German-speaking Internet.

Presently, mainly one feature is grabbing user's attention: The joining and creation of groups. The group concept was originally designed to create a place where people can discuss about topics of interests. However, more often belonging to a group becomes a personal statement. Therefore, the size of a group varies between one and more than 10.000 members, where group communication becomes nearly impossible. In addition, members are able to see the group memberships of their friends and other members (depending on security settings). Thus, a group membership has moved from a discussion room to an additional way to express someone's personality, which enlarges the overall profile, e.g. by designing group names like "We drink alcohol only on days of the week that end with day" or "I am pushing the remote control buttons even harder when the batteries are low". As everybody is free to create his or her own group, the number of groups and the number of memberships are constantly rising.

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<sup>2</sup> The number includes the subpages schuelerVz and meinVz, which are both run under the StudiVz umbrella. See [http://www.studivz.net/1/about\\_us/1](http://www.studivz.net/1/about_us/1) for further details

In the present study the perception of groups and group names respectively is functioning as an indicator for creativity.

## 4.2 Method

An online survey with members of StudiVz was conducted. To ensure that only members will take part in the survey we invited the participants via the StudiVz messaging system and sent them an URL link. Moreover, we asked the invitees to send the link to two or three mates via the platform message system only. Overall, we received 65 responses to the questionnaire. Due to the snowball effect (members forwarded the link to the survey to other members) it is not possible to announce a response rate. However, it is worth noting that the deviation of our sample is pretty close to a reference statistic of StudiVz users from December 2006 in terms of average age, completed fields or number of group memberships.

Previous research on creativity and innovation has focused on patent data and patent citation (Argyres & Silverman 2004, Laursen & Salter 2006, Miller et al. 2007) or on perceived innovative behavior in organizations (Siegel & Kaemmerer 1978, Scott & Bruce 1994, Kivimäki et al. 2000, Dewett 2007) as an indicator of innovation or creativity. The analysis of patent data delivers feasible insights for technological or industrial R&D environments. It is to a lesser extent transferable to other areas such as software development or as an indicator for creativity in non-R&D-environments and therefore not suitable for our research design. Furthermore, due to missing command structures in case of voluntarily knowledge sharing, platform using or idea generation, some variables from prior research known to be proved measures for creativity in a R&D environment like “supervisor encouragement” or “autonomy” (see Scott & Bruce 1994, Amabile et al. 1996, Zhou & George 2001, Zhou & Shalley 2003, Janssen 2005) are not applicable any more to measure creativity in a Web 2.0 environment. Therefore, along with our propositions we developed the following specific parameters:

### *Usage*

‘Usage’ refers to how frequent people use StudiVz. Usage in this case mirrors communication because the more often people use the application the more frequent they interact with other members. Users were asked how frequent they use StudiVz, which is ranked on a 5-Likert-type scale ranged from 1, “rare” to 5, “minimum once a day”.

### *Perceived Creativity*

‘Perceived creativity’ measures how people think about the creativeness of the content. Again, most items that could be found in the literature refer to hierarchical organizational settings (Scott & Bruce 1994, George & Zhou 2001 and Dewett 2007). Therefore, only three items were used: “The group names listed on my friends profile are creative”, “The personal statements of my friends are creative” and “The favourite quotes of my friends are creative”. Coefficient  $\alpha$  for this scale was 0.72.

### *Creative Thinking*

The variable ‘Creative Thinking’ was measured by asking if people start to think about new themes while they are dealing with StudiVz. In contrast to other studies (e.g. Amabile et al., 1996), this variable is our main indicator for creativity and includes the item “Creative group names initiate me to think about a foundation of an own group”. Therefore, this measure goes beyond the ex-post reflection which is provided by ‘Perceived Creativity’ and delivers insights if people feel enforced to be creative.

### *Control variable*



We included gender as a control variable because former studies are pointing to an influence of gender specific differences on creative ability (Conti et al. 2001). We coded gender as “1” for female and “2” for male.

## 5. Results and Discussion

Table 1 displays the descriptive statistics and correlations for each of the variables described in the previous section. ‘Creative Thinking’ is correlated to ‘Usage’ and ‘Perceived Creativity’ (0.26 and 0.34, respectively) which indicates that both are determinants related to creativity. In contrast to previous studies (e.g. Conti et al. 2001) the control variable ‘Gender’ has no significant correlation to ‘Perceived Creativity’ or to ‘Creative Thinking’.

Variable	Mean	SD	1	2	3	4
1. Gender	1.52	0.50	-			
2. Usage	4.52	0.73	0.14	-		
3. Perceived Creativity	1.91	1.09	- 0.05	0.05	-	
4. Creative Thinking	2.51	1.31	- 0.05	0.26*	0.35**	-

N=65  
\*p<0.05; \*\*p<0.01

**Table 1:** Means, standard derivations and correlations

To test our propositions we conducted a regression analysis whose results can be seen in table 2. In the first model, where ‘Perceived Creativity’ is the dependant variable the intensity of usage did not significantly influence the user’s perception of creative content supporting proposition number 2. The second Model shows that perceived creativity significantly influenced creative thinking ( $\beta=0.344$ ,  $p<0.01$ ), which supports proposition number 1.

Variables	Model 1: DV=Perceived Creativity	Model 2: DV=Creative Thinking
Control variable		
Gender	-0.048	-0.008
Independent variables		
Usage	0.031	0.170
Perceived Creativity		0.344**
R <sup>2</sup>	0.04	0.15*
$\Delta R^2$	0.02	0.11*

N=65  
\*p<0.05; \*\*p<0.01

**Table 2:** Regression analysis

The results of this exploratory study make at least one contribution: Even if the intensity of usage of social software applications has no significant impact on neither perceived creativity nor creative thinking (what was already predicted by several other studies if one interprets intensity of usage as communication; see (Kahn 1996, Kivimäki et al. 2000), perceived creativity itself can significantly influence creative thinking. The two supported propositions are therefore supporting our assumption that Web 2.0 applications – and social networking platforms in particular - are able to function as a proxy for creativity or as a creativity enforcing medium. If this holds true for social networking platforms like StudiVz it might also be the case for other social networking platforms as well as other types of Web 2.0 applications like instant messaging tools or blogs and even corporate social software applications. Obviously, answers to these questions can only be the result of further research. Regarding companies, Web 2.0 applications contribute to the process of permeating corporate boundaries because they are accessible for people from inside and outside a corporation (Hall & Graham 2004). Our findings assume, if companies want to make use of Web 2.0 users' experiences, ideas and creativity, they have to take into account that employees' expectations are driven by their private use of social software applications. Therefore, companies have to generate (virtual) rooms which enable employees to satisfy their wish to interact as they are used to. In addition, requirements on organizational culture and climate are very important for creativity and innovation (Amabile et al. 1996, Van Dijk & Van den Ende 2002, Martins & Terblanche 2003, Fagan 2004). A culture of trust in which employees are willing to participate and do not have to fear negative consequences of their social networking activities is a *conditio sine qua non*. Not to fear negative consequences leads to an increased willingness to take risks and to expose innovative ideas as an integral to employee creativity (Amabile et al. 1996, Zhou & George 2001, Dewett 2007) - what is given in a non-hierarchical Web 2.0 environment.

Finally, research findings on creativity are varying considerably depending on the type of creativity indicator used (Nantel & Glaser 2008). For example, referring to “objective” supervisor ratings of employee creativity differs from measuring perceived (“subjective”) creativity (Dewett 2007). Our measure of “starting to think creatively” is not well explored and is therefore only a first indicator for creative content production. Furthermore, as our sample is relatively small, the preliminary results are not feasible to predict creativity in Web 2.0 environments in general but they show that there is a hidden creative potential which needs to be explored in further research.

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