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This is a Final draft version of a publication
published by World Scientific Publishing
in International Journal of Innovation Management

DOI: 10.1142/S1363919613400100

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Please cite the publication as follows:

Kosonen, M., Gan, C., Olander, H., Blomqvist, K. (2013). My idea is our idea! Supporting user-driven innovation activities in crowdsourcing communities. International Journal of Innovation Management, vol. 17, issue 3. DOI: 10.1142/S1363919613400100

**This is a parallel published version of an original publication.
This version can differ from the original published article.**

My idea is our idea! Supporting user-driven innovation activities in crowdsourcing communities

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Abstract: There is a growing stream of research unravelling individual motivations to participate in idea crowdsourcing and online user communities. While the current research has mostly focused on individual user characteristics and overlooked the features of surrounding communities, our research turns the focus into the actual community where knowledge is shared and created. We investigate the relationships between perceived support from a crowdsourcing community, and the users' intentions to share knowledge. Based on a survey of 241 Chinese users of IdeasProject, our research shows that 1) for community trust, trust in the hosting company have a significant effect on knowledge sharing intentions, while collaborative norms do not; 2) for community support, both technology-based support and knowledge-based support have an effect on knowledge sharing intentions. From community management viewpoint, our results demonstrate the importance of providing continued support for knowledge

integration, such as more opportunities for user-to-user interaction and features for providing constructive feedback.

Keywords: online community; knowledge sharing; crowdsourcing; trust; institutional trust; norms

1 Introduction

Leading companies pay more and more attention to harnessing user input into their innovation process. One important form of such activity is idea crowdsourcing, which relies on a self-selection process among people who are willing and able to respond to soliciting user input (Lakhani et al., 2007, Zheng et al., 2011). Crowdsourcing is used to gain novel ideas and to be better able to respond to customer needs (Aitamurto et al., 2011). There is evidence that ideas stemming from users may even score higher than professionals' ideas in terms of novelty and customer benefit, thus offering valuable complementary source of new knowledge (Poetz and Schreier, 2012). However, the genuine innovative output calls for people who participate in sharing and creating knowledge, and optimal support for their activities.

While there is a growing stream of research unravelling individual *motivations* to participate in idea crowdsourcing (Kosonen et al., 2012, Zheng et al., 2011, Brabham, 2010, Leimeister et al., 2009) and online user communities in general (Nambisan and Baron, 2007, 2009, Jeppesen and Frederiksen, 2006, Wasko and Faraj, 2000), current research has mostly focused on individual user characteristics and overlooked the features of surrounding *communities*. To tackle this research gap, we incorporate two community-level constructs - community trust and community support - and investigate the relationships between trust and perceived support from a crowdsourcing community and the users' intentions to share knowledge. Hereby, we define an online community as a set of firm-hosted communication infrastructure, shared purpose, user base, and interactions between these users. Communities are flexible and constantly evolving organizational forms, that rely on peer-to-peer collaboration rather than hierarchies.

Community trust construct was chosen, because it is important to understand the impersonal side of trust that is typical for online interactions (see Kosonen et al., 2008). Boyd (2002, p.4) names trust in a community as "an ongoing system of risk-taking enabled by good will and positive expectation in other members of the system rather than by controls and guarantees that reduce user choice". However, many existing studies on OCs have focused on the elements of interpersonal trust such as other members' perceived ability, benevolence and integrity (Ridings et al., 2002, Uoro et al., 2007, Hsu et al., 2007). Community trust so far remains an unsettled concept that deserves further development. Our aim is to contribute to this evolving discussion.

Our research questions can be formulated as the following: How does 1) norm of collaboration 2) trust in hosting company 3) perceived easiness of use and 4) support for knowledge integration affect knowledge sharing intentions in an idea crowdsourcing community?

This paper is organized as follows. In section 2, we introduce the conceptual background and set out our hypotheses. Section 3 describes the research methodology

applied in the empirical part of the study. We report the results in section 4 and briefly analyze them in section 5. Finally, in section 6 we conclude with implications of the study as well as some potential avenues for further research.

2 Theoretical background

Community trust

Trust matters for any individual to be willing to share their ideas. The initial move has to be made without full knowledge of how another actor will respond (Lewis and Weigert, 1985). Trust may thus bridge the information gap and make action possible (Arrow, 1974). Respectively, it helps to create and maintain knowledge-exchange relationships. According to Mayer et al. (1995), trusting behaviour is manifested as reliance and disclosure, i.e. relying on other party's skills, knowledge, judgment or action, and even sharing sensitive information with the other. In online collaboration, there is often lack of knowledge of the other parties taking part in the community. Therefore, we argue that trust rather takes institutional than interpersonal forms (Bachmann, 2003) when it comes to crowdsourcing settings.

Also in online communities, trust is considered as a focal antecedent to knowledge sharing and member activities in general (Hsu et al., 2007, Ridings et al., 2002). In OC research, trust has been outlined to consist of three dimensions: dispositional (general trusting attitude), interpersonal, and system trust (Leimeister et al., 2005, Hsu et al., 2007). System trust is based on the perceived property of or reliance on a system or institution. Hereby, we label such properties as community trust, to reflect the online-community context. Community trust is thus defined as individual member's reliance on and willingness to engage in the interactions within the online collective. It is based on two separate but inter-related dimensions: 1) *the existence of collaborative norms*, which support members in achieving their objectives by facilitating cooperative and reciprocal interactions (Wasko and Faraj, 2000) and 2) *trust in the hosting firm*, which reflects members' reliance on the community operator and its fair practices (Porter and Donthu, 2008, Zheng et al., 2011). We will discuss these two dimensions more in detail in the following.

Collaborative norms

In general, norms represent a degree of shared understanding or consensus, while reflecting the values of a community (Coleman, 1990). Hence, *collaborative norms* are institutionalized expectations for collaborative values and behavior. We approach collaborative norms consisting of two dimensions: reciprocity and fairness. Reciprocity implies actions that are contingent on rewarding reactions from others and that cease when these expected reactions are not forthcoming (Blau, 1964). Mutual reciprocity is one of the most fundamental social norms characterizing expected individual behaviour such as information sharing, helping and commitment (Wasko and Faraj, 2000). Fairness is the experienced outcome of social interaction where the others have been considered as mutually reciprocal.

In social capital literature, norms are related to values such as honesty, openness, keeping commitments and reciprocity, which may then lead to increased cooperation (Fukuyama, 1999). Eventually social communities are maintained through such reciprocal interactions. Also online community studies imply that norm of reciprocity is established

in online exchanges and facilitates knowledge sharing (Wasko and Faraj, 2000, Wiertz and de Ruyter, 2007). In other words, when people act in order to contribute knowledge, they can trust such act to be reciprocated at the future to “pay back” their valuable input. It is also important for members to perceive that their input matters (Nambisan and Baron, 2010), underlining the importance of quick feedback and commenting, which help to establish sense of partnership with the collective.

The close relationship between collaborative norms and trust should be underlined here. Indeed, collaborative norms only become realized through trust: they have relevance for the community only if members of the collective are justified to believe that others will follow such norms. In a potentially risky situation and particularly in the often anonymous online knowledge exchanges, collective conventions have an effect on human action only when a person can trust other people not to violate such conventions (Castelfranchi and Tan, 2002). We thus posit that collaborative norms represent a core element for community trust to develop.

Trust in the hosting company

We also investigate the role of trust in the hosting company and its policies in taking care of the community. This is because in an idea crowdsourcing community, personal relationships between individual members do not necessarily evolve but the community is oriented towards the given tasks. Therefore, it is important to understand members’ perceptions of the community organizer and its practices.

In this paper we define user’s trust in hosting company as a belief in hosting company’s goodwill and integrity, grounding our definition in social exchange theory (Blau, 1964). The hosting company’s trustworthiness provides the impersonal trust that may complement or even substitute the lack of interpersonal trust relationships in the community. When interpersonal relationships have not been established, typical sources for (impersonal) trust are social norms, categories, processes and practices (Kosonen et al., 2008) such as fair information procedures (Culnan and Armstrong, 1999). Bilateral and reciprocal communication is needed in the customer-company interface to build durable relationships (Porter and Donthu, 2008).

In firm-hosted OCs, trust could be approached through two lenses: social and rational. From the social perspective, a firm’s benevolent acts towards the customer foster moral obligations so that he or she is more likely to perform reciprocal actions to maintain equity in the relationship (Järvenpää et al., 1998, Porter and Donthu, 2008). From the rational perspective, trust reduces the customers’ needs to act self-protectively and facilitates risk-taking in the relationship (Järvenpää et al., 1998). In the literature, trust in the hosting company is seen to consist of elements such as sponsor’s integrity, good judgment, and shared values (Porter and Donthu, 2008, Wu et al., 2010). Interestingly, Porter and Donthu (2008) did not find evidence on sponsor’s perceived opportunism to have an effect on trust. They suspect that members of firm-hosted OCs accept a certain degree of opportunism, as they apply mixed motives to a sponsor’s actions and its untrustworthy behaviour is limited to a specific context, of which the community is well aware.

Firm-hosted OCs are thus specific in that members do not act only for their own benefit or for each other, but also potentially for the hosting company. Typically members are already customers of the hosting firm (Wiertz and de Ruyter, 2007), and their participation is motivated by purchases of and enthusiasm for its products or services. Because of their long-time involvement, customers are likely to have established trust and commitment towards the company and the underlying brand (Algesheimer et al., 2005). Therefore, an interesting question remains: how does trust in the hosting company drive the intentions to

share knowledge in the online community? We note that there are not many empirical studies carried around this topic (see Porter and Donthu, 2008, and Zheng et al. 2011 as exceptions).

Community support

Even if trust provides a fruitful ground for collaboration, trust alone may not be enough for the success of the community. There is also a need to provide the necessary conditions for sharing and creating knowledge, and to support members in their efforts to engage in such activities. Online community design (e.g. Ren et al., 2007) generally consists of elements such as site navigation, community features or structure, and organizational policies. Taking our research context – idea crowdsourcing communities – into account, we approach the support given by the community through two lenses: technology-based support and knowledge-based support.

Technology-based support

Appropriate online tools reduce the cognitive effort of users to be able to create new knowledge (Füller et al., 2010). Technology and communication tools are focal for the well-being of the community, for which the community organizer is responsible. At the very least, the site should be uncluttered and easy to navigate (de Valck et al., 2007, Childers et al., 2001, Preece 2000). Well-designed community site positively affects the usage experience, whereas in the opposite case users may become frustrated and less attached to the community.

Easiness of use improves the comprehension of both content and structure, thus eventually providing a more comfortable community atmosphere to members (Cásalo et al., 2008). Usability issues become even more important as the communities grow larger in content and also provide many types of functionalities at the same time, including various types of textual and multimedia content, writing posts and reviews, rating and commenting.

Knowledge-based support

In supporting user activity, technical functionality and easiness of use is only the one side of the coin. The other side is the crux of any OC interactions: knowledge and content which is being exchanged within the community. Williams and Cothrel (2000) point out how OCs need to capture the information members need, and support accessing such information e.g. by creating taxonomies and structures. Requirements such as inspiring creativity and increasing efficiency also need to be taken into account in developing online communities (Piller and Walcher, 2006). The community needs to provide support for task- or project-related knowledge and its creation. This reduces the ambiguity of the current task or project, bridges the knowledge gaps between users and the community, helps users to formulate ideas from initial thoughts, and mentally stimulates their mind into generating new ideas (Gan et al., 2012).

However, knowledge tacitness often provides a challenge for online-community support. Zheng et al. (2011) point out how it is difficult to transfer knowledge needed to solve crowdsourcing-contest related tasks between the hosting sponsor and the individual participants. For instance, the design of the contest may remain ill-structured and inaccurately described, which causes misunderstandings among participants and hampers motivation to propose solutions. Zheng et al. (2011) further note how social interactions

and shared experiences provide the appropriate landscape for transferring organizational tacit knowledge, but in crowdsourcing settings the opportunities for such continuous interactions may remain limited. It is thus important to give optimal support for each task e.g. by providing the necessary background knowledge and links to external knowledge, while encouraging participants to elaborate their ideas.

According to Poetz and Schreier (2012), the ability of users to come up with potential new ideas depends most heavily on the underlying industry or product category, as well as the nature of the specific problem in question. When the knowledge needed is linked to user experience – as in their case of babyfeeding products – it is easier for users to succeed in formulating their ideas. However, when there are higher knowledge-entry barriers, more support from the community is needed to help users and reduce knowledge complexity e.g. through dialogue and interaction among users. Knowledge complexity here refers to the degree of difficulty in performing the necessary tasks in order to provide an idea (see Zheng et al., 2011). The community needs to provide support for sustaining participants' attention and focus even under conditions of more complex tasks.

Research model

Hemetsberger and Reinhardt (2009) note how online collaboration is often described by lack of authority and pre-determined rules. Rather, online communities need to establish certain behavioural patterns, norms and uses of technology to coordinate action (Lee and Cole, 2003). Prior research on OCs has identified that collaborative norms may develop based on user interactions and reciprocity (Wasko and Faraj, 2000) or the mere existence of shared social identity, such as identification with an online group's purpose or topic (Spears and Lea, 1992, McKenna and Green, 2002). No matter what their origins are, collaborative norms positively affect knowledge sharing (Wiertz and de Ruyter, 2007, Wasko and Faraj, 2005) and justify the expense members dedicate to the community in terms of time and effort spent (Chiu et al., 2006). Members thus need to perceive the community as fair and reciprocal. We hypothesize

Hypothesis 1 Collaborative norms positively affect the intentions to share knowledge.

In online communities, the level of actual knowledge sharing is driven by perceived trust (Porter and Donthu, 2008, Wiertz and de Ruyter, 2007, Hsu et al., 2007, Ridings et al., 2002). According to existing studies, when users are committed to the underlying company brand, they are more willing to share knowledge (Algesheimer et al., 2005, Cásalo et al., 2010). Respectively, they could be more likely to respond to company initiatives, e.g. discussions, surveys or polls. Porter and Donthu (2008) found evidence that trust in the firm hosting the community resulted in customers' willingness to share personal information. Similar findings have been reported also from crowdsourcing contests (Zheng et al., 2011), where trust was found to positively affect intentions to participate (see also Kim et al., 2008). Therefore, we hypothesize

Hypothesis 2 Trust in hosting company positively affects the intentions to share knowledge.

Regarding technology-based support, perceived easiness of use in OCs has been found to positively affect the attitudes towards community participation (Cásalo et al., 2010). It has also been found to increase members' visit frequency (de Valck et al., 2007). Appropriate design and satisfaction with the community site thus seem to facilitate knowledge sharing

in terms of both positive attitudes and the actual quantity of community participation. In this study, we focus on the knowledge-sharing intentions and hypothesize

Hypothesis 3 Perceived easiness of use positively affects the intentions to share knowledge.

Finally, support for knowledge integration has not been explicitly addressed in prior OC studies. However, as we noted earlier, community management needs to take into account both inspiring creativity and increasing the efficiency of knowledge sharing (Piller and Walcher, 2006). For instance, the community may provide additional knowledge resources and feedback that supports members in taking different perspectives into the issue in question and iteratively developing new knowledge. In this manner, the cognitive workload of members is eased and their attention focused towards providing ideas and proposing more feasible solutions to problems. We thus hypothesize

Hypothesis 4 Perceived support for knowledge integration positively affects the intentions to share knowledge.

Figure 1 depicts the research model applied in the study.

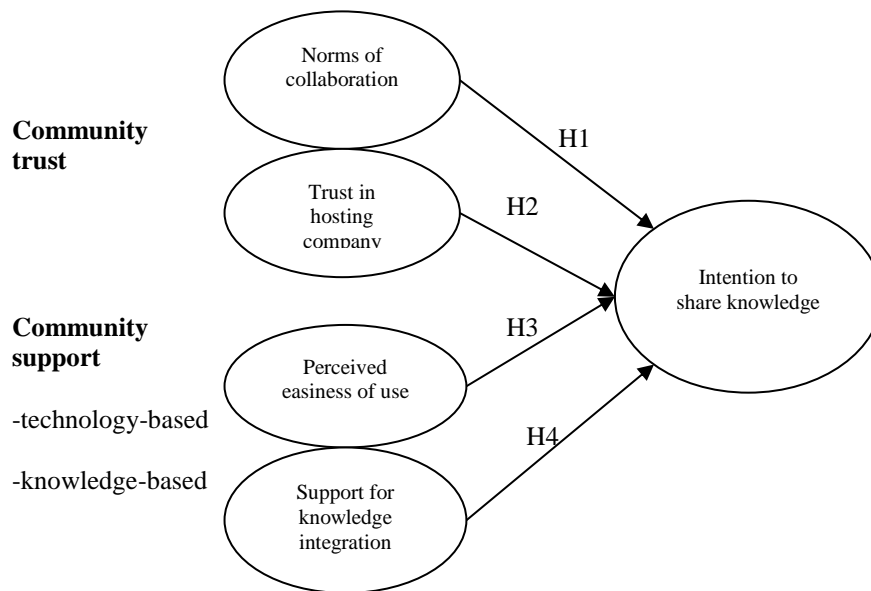


Figure 1. Research model

3 Research design

Measurement development

Independent variables

Norms of collaboration measure was developed based on McKnight et al. (1998). We also added one item from Nambisan and Baron (2010), reflecting the degree of perceived reciprocity in the community. *Trust in the hosting firm* was measured based on Zheng et al. (2011) directly from crowdsourcing settings. Measures for *perceived easiness of use* were adapted from the context of e-commerce by Flavián et al. (2006), applied also in later studies on company-hosted online communities (Cásalo et al., 2010). As discussed in the earlier section, measures for *knowledge integration* were new, as we did not find existing ones on this issue.

Dependent variable

Finally, the dependent variable *intentions to share knowledge* were measured based on Cásalo et al. (2010), where they focused on intentions due to 1) difficulties in measuring actual knowledge sharing behaviour in OCs 2) the fact that intentions seem to correlate highly with real behaviours.

Control variables

As control variables, gender, age and membership duration of the respondents were included, that were assumed to possibly have effect on the results. Appendix 1 shows all items for the variables and their sources.

Data collection

To test our hypotheses, we conducted a web-based survey within IdeasProject. It is an open innovation and brainstorming community, which enables the two-way exchange of ideas between users and developers. The site is powered and hosted by telecommunications company Nokia, which makes IdeasProject as an ideal environment to study company-originating crowdsourcing activities and increase understanding on how to best manage a community built around permanent and on-going idea generation. A significant amount of the ideas derive from competitions organized by the company (termed “challenges”), but the community also provides an open idea space, where users may freely suggest ideas in different topic categories and comment or rate each others’ input. At the time the survey was conducted, global IdeasProject community had operated around 1,5 years and the Chinese community of the site less than a year. It was thus in its early stages and starting to become more mature. The potential differences between the two sub-communities also provided a stimulus for conducting the survey: while the hosting company had already collected data from the global IdeasProject, it had less knowledge on how Chinese users would perceive the community. In prior research on OCs, the effect of national culture has

been underlined as well. For instance, the study by Siau et al. (2010) compared Chinese and American members of Yahoo! groups and noted that members in Chinese communities overall participated less in knowledge sharing, disseminated less knowledge to others – in contrast to acquiring knowledge from others – and also provided shorter messages than in American communities.

The survey instrument was originally created in English and translated into Chinese. All the items were measured by a 7-point Likert scale, with anchors ranging from “strongly disagree (1)”, “neither agree nor disagree (4)”, to “strongly agree (7)”. For the content validity, we employed a pre-testing of the questionnaire. 4 master students with experiences of participating in OCs were invited to give feedback on the initial questionnaire, including the contextual relevance, clarity and wording.

The online survey was conducted in a professional Chinese survey platform Sojump from 23rd February, 2012 to 7th April, 2012. An invitation with a hyperlink to the survey questionnaire was incorporated into one challenge project issued in February 2012, and a Chinese microblog was also used by the community manager to invite the potential users. A total of 283 users participated in the survey. No incomplete questionnaire existed because they cannot be submitted successfully. 42 respondents were discarded due to the reason that users chose the same answers for all or most of the questions (greater than 83.3%). The final effective sample size was 241, representing about 10 % of the overall user base of Chinese IdeasProject at the time of the survey. Table 1 presents the demographic information of the respondents.

Table 1 Demographic information of the respondents

<i>measures</i>	<i>items</i>	<i>frequency</i>	<i>percent (%)</i>	<i>measures</i>	<i>items</i>	<i>frequency</i>	<i>percent (%)</i>
gender	male	203	84.2	age	<18	26	10.8
	female	38	15.8		18-22	87	36.1
membership	< 1 month	176	73.0	23-28	90	37.3	
	1 month	12	5.0	29-35	30	12.4	
	2-3 months	12	5.0	36-45	8	3.3	
	3-4 months	10	4.1	frequency to log into IdeasProject	less	154	63.9
	4-5 months	11	4.6		monthly	30	12.4
	≥6 months	20	8.3		weekly	41	17.0
			daily		16	6.6	

4 Data analysis and results

Partial Least Squares (PLS) method was used to test the theoretical model. PLS is useful for exploratory analysis – as in our setting on knowledge sharing intentions in crowdsourcing communities, where the theoretical background is not well established particularly for the knowledge integration part – and it could provide better explanation than regression analysis. SmartPLS (Ringle et al., 2005) was adopted in the analysis. Following the two-stage procedure, we first assessed reliability and validity of the measurement model, and then the hypotheses were examined through the structural model.

Measurement model

To validate the measurement model, reliability, convergent validity and discriminant validity were assessed. Reliability can be assessed in terms of composite reliability (CR), and convergent validity was assessed by examining average variance extracted (AVE) (Hair et al., 1998). As shown in Table 2, values of CR range from 0.877 to 0.931, which exceed the recommended value of 0.70 (Chin, 1998), thus confirming the reliability. For AVE, all values ranging from 0.781 to 0.867 are above the generally acceptable value of 0.50 (Fornell and Larcker, 1981). Also, in Table 2, the square root of the AVE for each construct is greater than the degree of correlation involving the construct, which confirms the discriminant validity (ibid.). In addition, factor loadings are used for examining convergent validity and discriminant validity (ibid.). As seen from Appendix 2, values of all item-loadings are greater than 0.70, and they are larger than those on the cross-loadings, thus confirming the validity of the constructs.

Table 2 CR, AVE and correlation matrix

Construct	Mean	Std Dev	CR	AVE	NC	THC	EU	KI	ISK
Norms of collaboration (NC)	5.116	1.070	0.877	0.781	0.899				
Trust in hosting company (THC)	5.548	1.246	0.931	0.819	0.467	0.884			
Perceived easiness of use (EU)	4.781	1.173	0.918	0.788	0.540	0.487	0.888		
Support for knowledge integration (KI)	5.010	1.004	0.927	0.808	0.644	0.535	0.645	0.931	
Intention to share knowledge (ISK)	5.249	1.241	0.929	0.867	0.470	0.488	0.385	0.547	0.905
* Square roots of the AVE values are the bolded diagonal values.									

Structural model

Fig. 2 shows the results of the structural model. The model explained 37.7% (R^2 value) of the variance in intention to share knowledge, described as moderate by Chin (1988). T-

Statistics for the standardized path coefficients and calculated p-values were assessed based on a two-tailed test. Thus, Hypotheses 2, 3 and 4 were supported, while Hypothesis 1 was not. Specifically, Trust in hosting company (community trust) ($p < .001$) plays the most crucial role for users' intention to share, followed by perceived easiness of use (community support, technology-based) ($p < .05$). Finally, support for knowledge integration ($p < .10$) plays a significant, yet relatively weaker role. Also, the control variable age ($p < .10$) has a significant negative relationship with the intention to share knowledge. In the following chapter we will analyze these results in more detail.

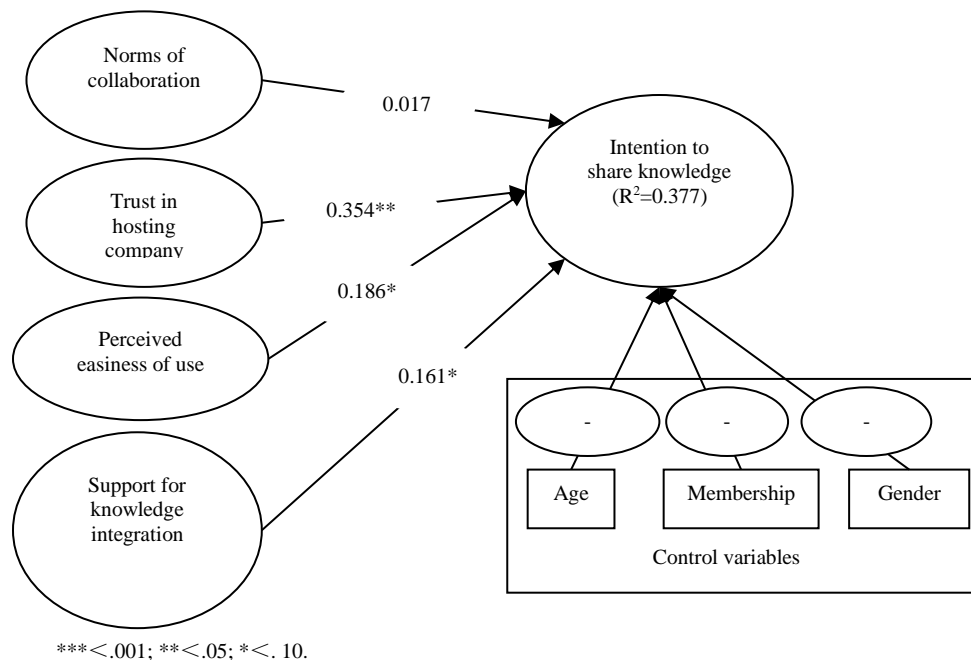


Figure 2. Results of PLS analysis

5 Discussion

Our first hypothesis (Collaborative norms positively affect the intentions to share knowledge) was not supported. Although earlier research has noted that collaborative norms and reciprocity enhance knowledge sharing in OCs, this was not the case in our data. We suspect this contradicting finding may be due to the newness of IdeasProject site in China and the relatively short time users had been members. Therefore, they may not have been very familiar with the community and the norms of collaboration may not yet have been established. Instead, members had possibly found other elements such as trust towards the hosting company to replace the lack of collaboration norms.

Hypothesis 2 (Trust in the hosting company positively affects the intentions to share knowledge) was found to be positively and significantly related to the intention to share knowledge. This implies that indeed, the positive perception of the company's fair practices and integrity (Zheng et al., 2011, Porter and Donthu, 2008, Culnan and Armstrong, 1999) together with earlier positive experiences of the company's brand,

products and services (Algesheimer et al., 2005) can also increase willingness to share knowledge for both the community's and the company's benefit. We suspect that trust also played a significant role in overcoming the potential national-cultural barriers related to sharing knowledge openly with unknown others, as it is often the case in OCs (Siau et al., 2010).

Also hypothesis 3 (Perceived easiness of use positively affects the intentions to share knowledge) was supported. The results were thus in line with earlier research on the effect of easiness of use to enhance community participation (Cásalo et al., 2010) and frequency of use (de Valck et al., 2007). We maintain that perceived easiness of use operates as a cornerstone for establishing optimal support for community activities, and positively contributes to the community's overall performance. Also in prior studies, easiness of use and system reliability have been considered as the most important factors for community usability (Phang et al., 2009), as they enable members to develop positive attitudes towards participation (Cásalo et al., 2010).

Finally, hypothesis 4 (Perceived support for knowledge integration positively affects the intentions to share knowledge) received support from the data ($p < .10$). This finding is interesting and fresh as knowledge integration has not been researched extensively before in OCs, even though it seems to have a positive influence on the knowledge sharing intentions.

Also from the control variables we employed, age was negatively and significantly ($p < .10$) related to the intention to share knowledge. In other words, the younger the users, the more willing they were to share – a positive signal in terms of knowledge sharing in a community with the majority of users being young adults, such as in our case. Their willingness to share more may be due to their higher experience and positive attitude towards online community participation.

6 Conclusions

Previous research has acknowledged the importance of studying online innovation communities and facilitating user activity in them (Nambisan and Baron, 2007, Porter et al., 2011). Our paper makes two important contributions. Firstly, even if existing studies on online communities cover many of the elements investigated, such as perceived easiness of use (de Valck et al., 2007) or the establishment of collaborative norms (Wasko and Faraj, 2000), they have not been systematically linked into one *community-support* construct. Secondly, our paper is among the first attempts to understand the relationship between community-supporting factors and knowledge sharing intentions in the novel context of firm-hosted idea crowdsourcing.

While many earlier studies have taken a descriptive perspective in order to identify different types of user motivations, our research turns the focus into the actual community where knowledge is shared and created. By unravelling four important community-related factors and their role – norms of collaboration, trust in the hosting company, perceived easiness of use, and support for knowledge integration – the study provides insight on how to best manage a community built around permanent and on-going idea generation.

In particular, our research demonstrates the vital role of *trust in the hosting company* to facilitate user activity in knowledge sharing. Therefore, trust in hosting companies deserves much more attention by both researchers and practitioners. Even if there is evidence that members of firm-hosted communities have already established high trust towards the organizer (e.g. Algesheimer et al., 2005), we believe that the implications of such trust remain understudied. For instance, how willing are members to interact with

each other, and how loyal they are 1) to the community 2) to the company's product or service offerings? According to Porter and Donthu (2008), trust in the hosting company implies many simultaneous benefits regarding sharing personal information, cooperation and loyalty. We call for further research where the effects of such trust are studied in different OC settings and also in loose online collectives such as in crowdsourcing communities.

For the hosting companies, it is important to learn from the perceived importance of community support, where the sponsors themselves have a good chance to contribute. Firstly, without easy-to-use software the online community may not reach its full potential. Secondly, once the community is up and running, community managers need to pay attention to continued knowledge-based support for users to be better able to formulate their ideas, drawing on multiple sources of knowledge and helping in its integration. In order to succeed, knowledge creation needs to be organized using well-defined and structured topics on the right tracks, while also enhancing interactivity between community members. We encourage future research where community support is investigated from the two perspectives proposed here: technology-based and knowledge-based. In particular, it would be valuable to develop the measures for knowledge-based support further and investigate community-supporting factors across different types of OCs.

Our most exceptional finding was the role of collaborative norms, which did not have an effect on knowledge sharing intentions. As suggested earlier, this may be related to the relatively young age of the community. An interesting question thus remains for further studies: how long does it take from an online community to establish such norms, and how could the hosting firm facilitate the collaborative behaviour among dispersed users? In our view, this calls for community features that support providing more constructive feedback, broader set of channels for user-to-user interaction, and demonstrating care-taking by the hosting firm's representatives. One possible solution could also be forming topic-oriented groups for idea development, in order to avoid highly "individualistic" and self-centered ideation efforts. In future research, it would be valuable to replicate the study on norms of collaboration when the community is at more mature stage. Considering norms and reciprocity, also the potential differences between the Chinese community and online communities established in other countries provide a promising avenue for further research on the effect of national cultures on knowledge sharing (see Siau et al., 2010).

Despite the possible lack of collaborative norms, IdeasProject users had developed positive intentions to share knowledge because of the trustworthy image and fair practices of the hosting company. We suspect that the role of trust in the company is accentuated in the early stages of community lifecycle, when collaborative norms may not yet have been established. From community management viewpoint, this is also a potential pitfall: active effort to facilitate collaboration needs to be taken on a continuous basis, rather than solely relying on the positive image of the hosting firm. Community trust thus deserves further actions and resourcing from management.

Regarding the limitations of our study, it should be noted that we only focused on knowledge-sharing intentions and did not tackle the actual levels of user activity based on community logs and user history. However, in line with existing OC studies (Cásalo et al., 2010) based on Theory of Planned Behavior (Ajzen, 1991), it is justifiable to believe that intentions highly correlate with real behaviours. An obvious limitation of our study is that we only collected data only from one Chinese community. Therefore, the results cannot be generalized across other types of OICs or cultural contexts. We encourage further research on OCs where the focus is on the community-level factors highlighted in the current study. For instance, it would be valuable to compare perceptions of community trust based on members' cultural or national background.

To conclude, we suggest that further research on online innovation communities should pay more attention to users' perceptions of the community-supporting factors rather than individual users as such. This is because many innovative users and lead users possess similar characteristics (Mahr and Lievens, 2012, Jeppesen and Laursen, 2009), whereas the community context is always a unique combination of varying site design elements, organizational policies, and knowledge bases.

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Appendix 1 Items wording

<i>construct</i>	<i>items</i>	<i>sources</i>
Norms of collaboration (NC)	IdeasProject users are motivated to work collaboratively with new ideas.	new, based on McKnight et al. (1998)
	IdeasProject users share collaborative norms such as reciprocity and fairness.	new, based on McKnight et al. (1998)
	I generally receive quick reaction/feedback on my ideas and suggestions.	Nambisan and Baron (2010)
Trust in hosting companies (THC)	Nokia is a trustworthy community sponsor.	Zheng et al. (2011)
	Nokia keeps it promises and will not be fraudulent.	Zheng et al. (2011)
	Nokia keeps ideators' best interests in mind.	Zheng et al. (2011)
Easiness of use (EU)	IdeasProject is simple to use, even when using it for the first time.	Flavián et al. (2006)
	In IdeasProject, I can easily find the information I am looking for.	Flavián et al. (2006)
	It is easy to navigate within IdeasProject.	Flavián et al. (2006)
Support for knowledge integration (SK)	IdeasProject community supports me in formulating my ideas.	new
	In order to organize my ideas, I could take inspirations on IdeasProject's knowledge.	new
	Expert knowledge in IdeasProject inspires me to view my ideas from different perspectives.	new
Intention to share knowledge (ISK)	I intent to provide ideas actively.	Cásalo et al. (2010)
	I intend to provide comments actively on other members' ideas.	Cásalo et al. (2010)

Appendix 2 Item-loadings and cross-loadings

Construct	Item	EU	ISK	KI	NC	THC
EU	EU1	0.861	0.396	0.516	0.415	0.457
	EU2	0.889	0.374	0.575	0.488	0.365
	EU3	0.912	0.471	0.619	0.528	0.467
ISK	ISK1	0.471	0.945	0.514	0.396	0.542
	ISK2	0.398	0.917	0.383	0.314	0.471
KI	KI1	0.609	0.409	0.884	0.590	0.471
	KI2	0.559	0.436	0.916	0.577	0.464
	KI3	0.573	0.468	0.897	0.571	0.506
NC	NC1	0.494	0.327	0.573	0.874	0.417
	NC2	0.461	0.353	0.566	0.893	0.409
THC	THC1	0.435	0.500	0.492	0.460	0.898
	THC2	0.458	0.460	0.481	0.385	0.910
	THC3	0.431	0.521	0.479	0.419	0.907