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More than a Need for Knowledge: Understanding Drivers of Knowledge Seeking Behavior in Online Communities

Completed Research Paper

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Abstract

Knowledge seeking is the default activity in online communities and therefore important for their functioning. Existing research studies on why members seek knowledge overlook other factors than a simple need for knowledge, resulting in an extremely narrow body of knowledge. We propose that a need for advice can increase knowledge seeking and is further shaped by perceptions of reciprocity, self-esteem, and identification with the community. By surveying 186 respondents from 34 large online communities and applying OLS regression analyses, we find that knowledge seeking is driven by need for advice and identification, but not reciprocity. The results further show that members with high self-esteem seek less knowledge. Yet, the decision to seek knowledge depends on the level of self-esteem and this is predicted by need for advice. Our results contribute to the currently sparse body on knowledge seeking and add to the realization of necessary design attributes of online communities.

Keywords: knowledge seeking, online communities, self-esteem, identification, need for advice

Introduction

Since the birth of the Internet, online communities emerged as open collectives of dispersed individuals with members who share common interest but are not necessarily known or identifiable (Faraj et al. 2011; Sproull and Arriaga 2007). According to Faraj et al. (2011) some online communities are focused on social bonding (e.g., Facebook), some are platforms where individual creativity can thrive (e.g., YouTube, InnoCentive), and others have become sources of innovation (Von Krogh et al. 2012; O'Mahony and Ferraro 2007; Ye et al. 2016). In an online community, knowledge exchange, which involves both acts of sharing and seeking knowledge, is a key activity of online community members (Faraj et al. 2011).

Since the emergence of online communities, Information Systems (IS) scholars researched the reasons why individuals share knowledge in different kind of online communities (Bell et al. 2012; Bretschneider et al. 2015; Hars and Ou 2002). For example, sharing knowledge in online communities is often attributed to the gain of reputation or the wish to get access to new knowledge (Bretschneider and Leimeister 2017; Lou et al. 2012). Other explanations suggest that individuals share knowledge based on self-interest, personal benefits and an expectation of future rewards (Jarvenpaa and Staples 2000).

Interestingly, research so far seems to focus only on analyzing various reasons for individuals' knowledge sharing but not on individuals' knowledge seeking reasons. While the body of knowledge offers a plenty of explanations why community members are actively share knowledge in online communities, there seems to exist only one explanation why individuals seek knowledge: they have a current need for certain knowledge such as looking for advice on how to repair a coffee machine. Existing studies leave out considering other factors than "need for knowledge". This led to an extremely narrow body of knowledge, although insights on community members' reasons for seeking knowledge are highly relevant for information systems (IS) research. Understanding the reasons is important not only because of the increasing prevalence of online communities, but also because this understanding informs the design of web-based community platforms. By knowing the reasons for seeking for knowledge, this information could help to systematically design tailored incentive systems and IT artifacts that in future supports community members' search activities more efficiently.

The aim of this research is twofold. First, we empirically investigate community members' reasons for seeking knowledge – beyond the reason of "need for knowledge". Second, we build a theoretical model that considers drivers for seeking knowledge. This allows for a more customized view on knowledge seeking behavior in online communities. To test our theory, we use a sample of 186 respondents from 34 large online communities and apply OLS regression analysis. The results of our study offer a deeper and more precise understanding of community members' reasons for seeking knowledge and thereby contribute significantly to the currently sparse body of knowledge on this phenomenon. Furthermore, our results make major contributions to that stream of IS research that seeks to examine how human behaviors inform the design and use of web-based information systems. In the future, this stream of IS research may draw on our findings to systematically design, implement, and evaluate potential incentive systems that better support individuals to seek knowledge in online communities.

We organize the rest of this paper into five sections. In the first section, we briefly review extant literature on knowledge exchange in online communities. The second section introduces our conceptual model and hypotheses development. In the third section we describe our methodology before presenting our results in the fourth section. Finally, in the fifth section, we discuss our results.

Extant Literature: Why Do People Seek Knowledge in Online Communities?

IS literature has paid much attention on knowledge exchange in online communities. The literature on the investigation of drivers focuses on individuals' motives as drivers for knowledge exchange behavior in online communities. In general, a motive is seen as an individually developed and content-specific psychological disposition (Deci and Ryan 1985). Some motives are inborn, while a relatively stable set of motives is developed during an individual's socialization process. The term motivation describes the process of how an individual's motives become activated and lead to a certain behavior. In other words, motivation is the energization of behavior (Deci and Ryan 1985). A certain situational context, that an individual perceives, serves as an incentive or impulse that starts this process, meaning this incentive or impulse stimulates the corresponding motives (Schacter et al. 2011). Adapted to the knowledge seeking case, the situational context could be a perceived advantage, which then stimulates an individual's "seeking for advantages" motive. This activated motive then subsequently causes a certain behavior, meaning in the context of knowledge seeking that this individual seeks knowledge.

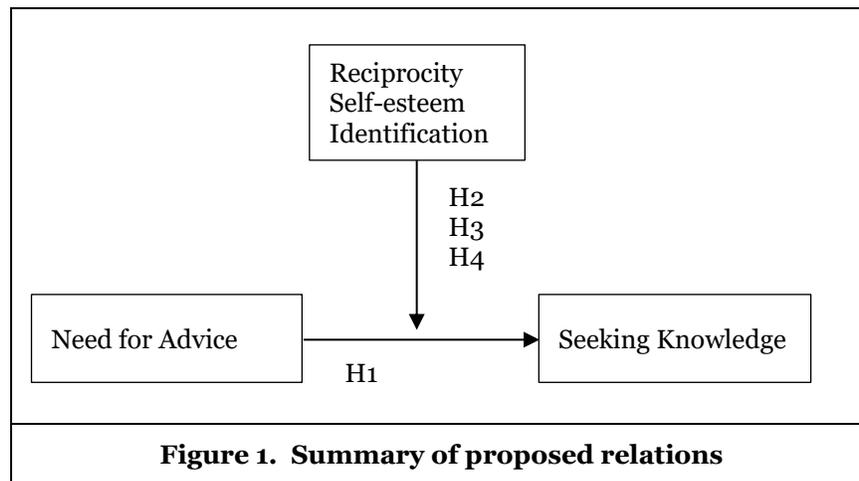
Whereas the body of knowledge offers a plenty of explanations why community members are actively sharing knowledge in online communities (Guan et al. 2018; Wasko and Faraj 2000; Zhao et al. 2016), studies on why people seek knowledge have remain limited. The focus on knowledge sharing in online communities is based on the power law distributions in the contributions and among contributors and unless knowledge is shared, the online community might collapse. However, knowledge seeking is the

default activity for every participant in an online community and therefore an important activity for the functioning of the community. Knowledge seeking in an online community typically involves the use of a search tool to locate the knowledge and posting a new request when the knowledge sought is not available. In doing so, knowledge seekers might employ the number of contributions made by each member to identify active members to decide from whom to seek knowledge. This behavior requires a generic need for knowledge. Yet, it seems to be common sense that the need for certain knowledge is the only and predominant reason for why people search for knowledge in online communities (Zhao et al. 2016). Scholars so far leave out considering other factors than “need for knowledge”. For example, it could be that members need to feel a sense of belonging to the community before actively seeking knowledge. This means that members feel understood and obtain a sense of coherence. Although knowledge seeking is a key behavior of individuals in online communities, research so far seems focusing only on identifying reasons for individuals’ knowledge sharing behavior.

This led to an extremely narrow body of knowledge, although insights on community members’ reasons for seeking knowledge are highly interesting and relevant for information systems research. Both behaviors are at the core of an online community. Understanding such reasons is important not only because of the increasing prevalence of online communities, but also because this understanding informs the design of web-based community platforms. By knowing the reasons for seeking knowledge, this information could help to systematically design tailored incentive systems and IT artifacts that in future would support community members’ search activities more efficiently. Against this background, this study sheds light on the reasons for knowledge seeking behavior in online communities.

Conceptual Model and Hypotheses Development

Based on the extent literature review, we propose a conceptual model for factors influencing seeking knowledge. Figure 1 illustrates the proposed relations summarizing the hypotheses that will be explained below.



Need for Advice

When individuals need advice, they are asking others for resources or to recommend either a solution or a process to address a challenge. For example, when individuals post ill-defined problems that have no clear solution paths, they need advice on how to reason through the problem (Hofmann et al. 2009). A study by Jeppesen and Frederiksen (2006) demonstrated that users are more actively seeking knowledge in a group when confronted with problems that need to be solved. Thus the need for advice may be a strong reason to seek knowledge online. As such we hypothesize:

Hypothesis 1. A high need for advice will positively affect knowledge seeking.

Reciprocity

By definition, reciprocity is a social norm where individuals act with the expectation of future favors in return (Sethi and Somanathan 2003). When an individual does something helpful for another individual, this individual feels obliged to help out in return. The action of one individual depends on the actions of one specific other individual (direct reciprocity) or on the collective actions of a group of individuals (generalized reciprocity) (Sethi and Somanathan 2003). The repetition of interactions leads to the development of a web of interdependent obligations between members that ensure knowledge exchange in general. Wasko and Faraj (2000) in their pioneering qualitative study find that moral obligations of reciprocity exist in online communities. Some quantitative studies (Hwang et al. 2015; Kankanhalli et al. 2005; Wiertz and de Ruyter 2007) are not able to find proof for the expectation of reciprocity due to the large scale of a community and the lack of sanctions to punish non-reciprocating individuals. Yet some form of social norm does exist in most communities (Guan et al. 2018). As a consequence, members respond to friendly behavior and are frequently much more cooperative (Chen and Hung 2010; Zhao et al. 2016). Knowledge seeking is not demanding, but members can be easily discouraged by other members' rude behavior or when they think it is useless to seek knowledge. Members that have a need for advice, observe the norms of reciprocity in the community. Perceived strong norms of reciprocity protects members from others behaving incorrectly, as violations are punished or there are rules for behavior. Therefore, it can be expected that a necessary norm of reciprocity does exist in online communities that can be valid for seeking knowledge (Henrich et al. 2010; Panchanathan and Boyd 2004). If members perceive a positive social norm to obtain reciprocal benefits, their need for advice would increase their knowledge seeking behavior and they would expect others to provide answers to their question. Specifically, a member who is motivated by reciprocity would not encounter a barrier, which in turn has a positive effect on the relation between their need for advice and knowledge seeking behavior. Therefore, we argue:

Hypothesis 2. Norms of reciprocity positively and significantly moderates the relationship between need for advice and knowledge seeking in the sense that the higher the level of reciprocity is, the stronger is the positive effect of need for advice on knowledge seeking.

Self-esteem

Psychologists define self-esteem as an individual's overall subjective emotional evaluation of his or her own worth (Hewitt 2009). Self-esteem can be described as beliefs about oneself, such as feeling competent, worthy etc. (Hewitt 2009). Smith and Mackie (2007) defined it as "the positive or negative evaluations of the self" and, therefore, self-esteem gives individuals a sense of their personal value. Thus, self-esteem affects the way individuals act in the world and the way they are related to everybody else (Smith and Mackie 2007). For example, it was found that individuals with higher levels of self-esteem believe in certain values and principles, and are ready to defend them even when finding opposition, feeling secure enough to modify them in light of experience (Hamachek 1971). Further, these individuals are able to act according to what they think to be the best choice, trusting their own judgment, and not feeling guilty when others do not like their choice (Hamachek 1971). According to Hamachek (1971), individuals with higher levels of self-esteem are also fully trust in their capacity to solve problems, not hesitating after failures and difficulties and understand how they are an interesting and valuable person for others, at least for those with whom they have a friendship. Scholars found that higher levels of self-esteem in individuals, meaning individuals that are equipped with the described characteristics, lead to a higher happiness (Baumeister et al. 2003), satisfaction in marriage and relationships (Orth and Robbins 2014) and even to certain behavior, such as criminal behavior (Orth and Robbins 2014). Based on these insights we believe individuals with higher levels of self-esteem, meaning equipped with the described characteristics, strengthen the effect of need for advice on knowledge seeking behavior in online communities, since they trust in their own competences regarding a certain field of knowledge. Besides the above described characteristics, it was found by several scholars that individuals with higher levels of self-esteem ask others for help in case they feel not competent in certain fields of knowledge (Hamachek 1971). Therefore, we argue:

Hypothesis 3. Self-esteem in community members positively and significantly moderates the relationship between need for advice and knowledge seeking in the sense that the higher the level of self-esteem is, the stronger is the positive effect of need for advice on knowledge seeking.

Identification

Identification with the community reflects an individual's effort to present one's identity to others in order to achieve a mutual understanding (Zhou 2011; Ren et al. 2012). Members of a community wish to explain themselves to others regarding their identity before concentrating on the discussion that might bring them together. By reaching consent regarding the identities, members feel understood and obtain a sense of coherence in the community. Such understanding is argued to be a crucial determinant of online knowledge seeking behavior (Lou et al. 2012; Ma and Agarwal 2014). Former studies have provided evidence that effective identification of an individual with the community can foster knowledge exchange (Kankanhalli et al. 2005; Ma and Agarwal 2014; Wasko and Faraj 2000, 2005). Yoo et al. (2002) conducted a survey on eight different online communities and find that participation in the community is strongly influenced by a sense of identification. Likewise, from a relationship-building perspective, members that identify with the community are more likely to communicate with each other. Effective identification with the community can help members to find similar others through discussing the problem or topic at hand. In turn, members feel safe to seek knowledge from others. Thus, establishing an online identity with the community can strengthen the relation between need for advice and seeking knowledge. Therefore, we hypothesize:

Hypothesis 4. Identification with the group positively and significantly moderates the relationship between need for advice and knowledge seeking in the sense that the higher the level of identification is, the stronger is the positive effect of need for advice on knowledge seeking.

Method

Procedure and Participants

We sent out a survey to selected large, professional online communities hosted on a social network platform for German professionals (www.xing.de). Xing.de is a site comparable to the internationally known site linkedin.com. This study utilizes xing.de as it is the most popular German professional platform with 12.1 million users (roughly 15% of the German population; data retrieved from xing.de, statista.com, and socialbakers.com). Xing.de allows users to share a professional profile including descriptions of their career, competences, interests, etc. Moreover, it allows users to establish communities and discussion forums. To identify relevant communities for this study, we first identified communities that specialized in professional practices and addressed different knowledge domains such as automotive engineering or software development. In addition, communities that were mainly concerned with broad issues, such as career issues or labor markets, were excluded. While selecting the communities, special attention was paid to a) larger communities in favor of dense communities and b) a general diversity in group sizes. In total, 40 communities were selected with a range from 200 members to nearly 40000 members per community. The community activity ranged from very low (0.07 posts per member) to very high (4.81 posts per member) with a mean of 0.77.

A link to the survey was posted online in the selected communities. In addition, the respective moderators were contacted to post the survey in a newsletter to increase participation. In total 667 members opened the survey out of which 186 members out of 34 communities completed the survey (response rate 27.9%). In the mean the respondents were male, about 41 years old and well educated with two-thirds having graduated from a university and additional 17% high school graduates. The typical respondent is either employed in a company (69%) or a freelancer (24%) and is member in nearly five communities. Table 1 summarizes key characteristics of the respondents. In order to test for a possible nonresponse bias we followed the approach of Armstrong and Overton (1977) that is based on the assumption that the way late respondents answer the questionnaire is similar to non-respondents. The results of the t-tests show no significant difference between early and late respondents and thus lower the concern for nonresponse bias.

	Mean	Std. Dev.	Min	Max
Age	40.78	9.38	21	65
Gender	0.09	0.29	0	1
Employed	0.69	0.46	0	1

Self-employed	0.24	0.43	0	1
Apprenticeship	0.10	0.30	0	1
High school diploma	0.17	0.37	0	1
University graduate	0.66	0.47	0	1
Community memberships	4.74	4.12	1	20

Table 1. Descriptive statistics

Measurement Development

In order to measure the constructs presented in the study, a questionnaire was set up. For every proposed factor four items were developed based on existing literature and scaled on a six-point Likert-scale ranging from 1 (completely disagree) to 6 (completely agree). For factors that had been conceptualized and discussed in the previous literature but never operationalized new items were developed. One factor was constructed to cover the dependent variable of this study: Knowledge seeking measured in how far individuals gather knowledge from the online community (Usoro et al. 2007; Wasko and Faraj 2005). Regarding the drivers for knowledge seeking, the variables of primary interest were comprised of participants' need for advice from the community (Hars and Ou 2002; Jian and Jeffres 2006), and reciprocity indicating the expectancy of directly or general benefitting from participation (Kankanhalli et al. 2005), as well as self-esteem (Bansemir et al. 2012; Hars and Ou 2002) and identification (Wasko and Faraj 2000).

A number of control variables were also included in the study. In accordance with previous studies, we measured knowledge sharing as the active sharing of relevant knowledge to the community (Usoro et al. 2007; Wasko and Faraj 2005). We examined possible barriers to participation as effort (Hoegl et al. 2001; Kankanhalli et al. 2005), reputation building (Kankanhalli et al. 2005), knowledge self-efficacy (Kankanhalli et al. 2005; Wasko and Faraj 2000, 2005), fear of criticism (own items based on Ardichvili et al. 2003) by other members if one inadvertently posted wrong or irrelevant content, prosocial behavior (Henrich 2004; Henrich et al. 2010) describing behavior that is intended to benefit the community without expectancy of personal outcomes (Kankanhalli et al. 2005), confidentiality issues (own items based on Ardichvili et al. 2003, Bouty 2000) preventing members from actively taking part due to contractual obligations with their employer, and competitiveness (own items based on Ardichvili et al. 2003, Jeppesen and Frederiksen 2006) if members regarded the obtained information as means gain advantage in their field. Moreover, we controlled for perceived integrity (Jahnke 2010; McAllister 1995; Ridings et al. 2002; Usoro et al. 2007) and the cooperative culture in the community (Kankanhalli et al. 2005; Wasko and Faraj 2000, 2005). In addition, demographic controls for occupational status, age, gender, educational status, and number of memberships were added.

Preliminary Exploratory Factor Analysis

The items were subjected to a maximum-likelihood factor analysis (varimax rotated). It was possible to reproduce 14 out of 15 postulated factors. All items with factor loads beneath 0.5 or uniqueness above 0.5 were excluded from the item batteries to guarantee the discriminate validity of the constructs. This left the analysis with two to four items per factor and a high to very high internal consistency of the identified factors (Cronbach's α varies between 0.77 to 0.94 with 0.85 on average). Only the proposed factor for reciprocity was not reproduced (Cronbach's $\alpha = 0.49$). After closer investigation, it was decided to split it into the factors of direct reciprocity and generalized reciprocity using the two items with the highest uniqueness as single item measures. For direct reciprocity the item was "If I request advice from a specific member and do not get it I will be less inclined to help that person in the future" (uniqueness = 0.81), for generalized reciprocity "When I am sharing my knowledge in this community I expect to get advice from a member when I request it" (uniqueness = 0.85). Table 2 gives an overview of all items, the item sources, and the internal consistencies of the factors.

Table 2. Items, item sources, and internal consistencies	
Item and item sources	α
Knowledge seeking (Usoro et al. 2007; Wasko and Faraj 2000; 2005)	0.92
I regularly frequent the community when searching for possible solutions	
I visit this community to receive information on a specific topic	
I regularly frequent the community when searching for possible solutions	

This community often supplies me with relevant information to solve a problem	
Need for advice (Hars and Ou 2002; Jian and Jeffries 2006)	0.87
In this community I receive effective information for my professional field	
By actively participating in this community I can improve my professional knowledge	
Reciprocity (Kankanhalli et al. 2005)	0.49
If I request advice from a specific participant and do not get it I will be less inclined to help that person in the future	
When I am sharing my knowledge in this community I expect to get advice from a community member when I request it	
Self-esteem (Hars and Ou 2002)	0.86
Participation in this community gives me a feeling of accomplishment	
When I actively participate in this community I am pleased with myself	
Identification (Kankanhalli 2005; Wasko and Faraj 2000, 2005)	0.89
I regularly tell my friends about this community in a favorable way	
I identify with this community	
I am proud to be a part of this community	
Reputation (Kankanhalli et al. 2005; Lakhani and von Hippel 2003)	0.94
When I share my knowledge with the community I earn respect	
My professional image is enhanced when I share knowledge with this community	
Others conceive me in a more favorable way when I share knowledge in this community	
When I answer questions in this community my reputation in my professional field is improved	
Prosocial behavior (Kankanhalli et al. 2005; Lakhani and von Hippel 2003)	0.88
I enjoy sharing my knowledge with the community	
It feels good to help someone by sharing my knowledge in this community	
I am answering questions in this community because it is fun	
Knowledge self-efficacy (Kankanhalli 2005; Wasko and Faraj 2000, 2005)	0.89
I have profound expertise in the topics discussed in this community	
I am equipped with the professional knowledge to make valuable contributions to this community	
Integrity (Ridings et al. 2002; Usoro et al. 2007)	0.83
Other community members would not try to intentionally disturb the cooperation in this community	
The community members are sincere	
Cooperative culture (Kankanhalli et al. 2005)	0.80
In this community mistakes are tolerated	
The community climate is generally cooperative	
Effort (Kankanhalli et al. 2005)	0.82
When I share my knowledge with the community I am worried that I will have to invest additional time to answer follow-up questions	
It takes effort to codify my knowledge	
I fear that my contributions to the community will lead to the need of further clarifications	
Fear of criticism (Ardichvili et al. 2003)	0.79
I am worried that I will not be taken seriously anymore when I share faulty information with the community	
It would be embarrassing for me to share information that would later turn out to be wrong	
I fear that I would compromise myself by giving the wrong answer to a question	
Confidentiality issues (Bouty 2000; Ardichvili et al. 2003)	0.81
I can't share certain knowledge with the community due to confidentiality issues	
At work I am subject to non-disclosure agreements that prevent me from sharing certain information relevant to this community	
My employer would object to sharing certain information with this community	
Competitiveness (Ardichvili et al. 2003; Jeppesen and Frederiksen 2006)	0.77
I want to have more information than others in my professional field	
I like to achieve better results than others	

Knowledge sharing (Usoro et al. 2007; Wasko and Faraj 2000; 2005)	0.80
I regularly contribute knowledge to the community that helps other members to solve problems	
I am contributing more knowledge than other community members	
I often share information on a specific topic	
My contributions to the community enable other members to develop new knowledge	

Table 2. Measures used in this study

Results

The correlations of the variables in table 3 show slight to moderate correlations. Knowledge seeking is slightly higher correlated with need for advice ($r=0.63$, $p<.01$) and identification ($r=0.60$, $p<.01$). Furthermore, knowledge seeking is moderately correlated with self-esteem ($r=0.33$, $p<.01$). The results further show that knowledge seeking is not correlated with direct reciprocity ($r=0.02$, ns). Furthermore, knowledge seekers more actively share knowledge in a community, possibly due to pressing problems that need to be solved ($r=0.41$, $p<.01$). Last, a moderate correlation can be found between need for advice and identification ($r=0.55$, $p<.01$) indicating that actively taking part in a community can reinforce a need for advice and vice versa. All in all, no high or unexpected correlations were found that would prevent the use of all variables in a regression analysis.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1) Knowledge seeking															
2) Need for advice	0.63**														
3) Direct reciprocity	0.02	0.12													
4) Self-esteem	0.37**	0.48**	0.07												
5) Identification	0.60**	0.55**	0.06	0.52**											
6) Reputation	0.33**	0.39**	0.28**	0.48**	0.45**										
7) Prosocial behavior	0.41**	0.47**	0.06	0.43**	0.43**	0.35**									
8) Knowledge self-efficacy	0.22**	0.20**	0.08	0.11	0.23**	0.24**	0.27**								
9) Integrity	0.34**	0.26**	0.02	0.16*	0.35**	0.14*	0.28**	0.13							
10) Cooperative culture	0.36**	0.33**	-0.03	0.16*	0.38**	0.06	0.35**	0.11	0.49**						
11) Effort	-0.17*	-0.15*	0.00	-0.12	-0.18*	0.01	-0.20**	-0.06	-0.02	-0.22**					
12) Fear of criticism	0.03	0.11	0.25**	0.20**	-0.01	0.22**	0.08	-0.10	-0.01	-0.15*	0.30**				
13) Confidentiality issues	0.08	0.08	0.03	-0.18*	0.01	0.00	-0.08	0.13	-0.02	0.02	0.20**	0.05			
14) Competitiveness	0.15*	0.18*	0.02	0.14*	0.20**	0.22**	0.27**	0.35**	0.08	0.14*	0.00	-0.01	0.18*		
15) Generalized reciprocity	0.13	0.14*	0.32**	0.07	0.03	0.14	0.18*	0.15*	0.05	0.07	-0.12	0.11	-0.06	0.01	
16) Knowledge sharing	0.41**	0.33**	0.00	0.32**	0.47**	0.32**	0.38**	0.48**	0.07	0.20**	-0.22**	-0.13	-0.03	0.23**	0.08

* $p<.05$; ** $p<.01$

Table 3. Correlations

Results of Hypotheses Testing

The results of the regression analysis are displayed in table 4. Data were analyzed using OLS regression analysis with knowledge seeking as dependent variable. The independent and moderator variables were centered prior to creating the interaction variables. We entered all variables in Model I before dropping insignificant controls in the following specification models (Models II-III). The fourth model shows a reduced specification where all insignificant variables have been removed. For each model, we included clustered standard errors to control for group membership. The Bayes Information Criterion (BIC) and the adjusted explained variation (R^2) were used to assess the quality of the alternative specifications. In addition, we performed a linktest (hat and hat^2) to test if our model was properly specified. As can be seen in table 4 the last specification (Model IV) is a vast improvement over the other models ($BIC=-105.01$; $R^2=0.52$; $hat=0.72$, $p<.05$; $hat^2=0.04$). Since we developed our own questionnaire, multicollinearity could be an issue. In order to statistically test for multicollinearity, we calculated the variance inflation factor (VIF) which indicated that multicollinearity was not an issue in our study (VIF=1.58 for need for advice, VIF=1.01 for reciprocity, VIF=1.50 for self-esteem, and VIF=1.67 for identification). According to Urban and Mayerl (2006) and the VIF value should not exceed 5.0. The results reveal a robust picture of individual knowledge seeking in online communities.

Table 4. Results of OLS regression analysis predicting knowledge seeking				
Independent variables	Model I	Model II	Model III	Model IV
Need for advice	0.38*** (0.07)	0.39*** (0.06)	0.36*** (0.06)	0.40*** (0.03)
Direct reciprocity	0.13 (0.09)	0.15 (0.08)	0.11 (0.09)	
Self-esteem	-0.46** (0.23)	-0.44** (0.21)	-0.35** (0.15)	-0.22** (0.08)
Identification	0.39 (0.28)	0.37 (0.19)	0.50* (0.27)	0.20*** (0.04)
Need for advice × Direct reciprocity	-0.05** (0.02)	-0.05*** (0.01)	-0.05 (0.02)	
Need for advice × Self-esteem	0.11 (0.07)	0.11* (0.06)	0.09* (0.05)	0.04** (0.02)
Need for advice × Identification	-0.04 (0.05)	-0.04 (0.04)	-0.03 (0.04)	
Controls				
Reputation	0.02 (0.06)			
Prosocial behavior	0.03 (0.07)	0.03 (0.07)		
Knowledge self-efficacy	0.02 (0.06)			
Integrity	0.17** (0.07)	0.19*** (0.05)	0.16*** (0.04)	0.15*** (0.05)
Cooperative culture	0.03 (0.04)			
Effort	-0.08* (0.04)	-0.08* (0.04)	-0.07** (0.03)	-0.04* (0.02)
Fear of criticism	0.04 (0.05)	0.03 (0.05)		
Confidentiality issues	0.09 (0.05)	0.09* (0.05)	0.05 (0.03)	
Competitiveness	-0.05 (0.05)	-0.07 (0.05)	-0.02 (0.04)	
Generalized reciprocity	0.03	0.03		

	(0.04)	(0.04)		
Knowledge sharing	0.13*	0.14**	0.12**	0.12**
	(0.06)	(0.05)	(0.05)	(0.05)
Community memberships	-0.05	-0.04		
	(0.07)	(0.06)		
Freelancer	0.16	0.17		
	(0.26)	(0.24)		
Employed	0.14	0.18		
	(0.22)	(0.20)		
Age	0.00	0.00		
	(0.00)	(0.00)		
Gender	0.06			
	(0.23)			
High school diploma	-0.20	-0.18		
	(0.24)	(0.22)		
University degree	0.13	0.15		
	(0.20)	(0.20)		
Constant	-0.67	-0.40	0.03	0.53
Adjusted R ²	0.61	0.56	0.52	0.52
Hat	0.69**	0.71***	0.68**	0.72**
Hat ²	0.04	0.04	0.04	0.04
BIC	-31.53	-52.82	-88.14	-105.01
Number of participants	163	167	186	186

* $p < .10$; ** $p < .05$; *** $p < .01$; robust standard errors in parentheses

Table 4. Results of regression analyses

For knowledge seeking, need for advice is a necessary precursor confirming hypothesis 1 ($\beta=0.40$, $p < .01$). A similar picture is revealed for identification showing that group identity plays a vital role in the functioning of online communities ($\beta=0.20$, $p < .01$). Identification enhances overall participation towards knowledge seeking, leading to a higher volume of information flow and a more active community. The results further show that high self-esteem has a negative influence on knowledge seeking ($\beta=-0.22$, $p < .05$). It seems that high self-esteem, i.e. members that believe in themselves, leads to less knowledge seeking. Yet, in support of hypothesis 3, we find a positive and significant interaction effect of self-esteem on the relation between need for advice and knowledge seeking ($\beta=0.04$, $p < .05$). In the presence of high self-esteem, need for advice is an important predictor of knowledge seeking. This result suggests that self-esteem forms a certain threshold for seeking knowledge. Thus, the decision to seek knowledge depends on the level of self-esteem and this is predicted by need for advice.

Besides the significant results, direct reciprocity forms an exception. No expectancy of direct reciprocal behavior is a necessary antecedent for knowledge seeking ($\beta=0.03$, ns). When looking at the results for hypothesis 2 we find a significant and negative interaction effect of direct reciprocity on the relation between need for advice and knowledge seeking in the first and second specification model (Model I and II). Due to the insignificant effect in the third and in the final model ($\beta=-0.05$, ns ; Model III), however, this result should be treated with caution. Last, we find no moderation effect of identification with the group on the relationship between need for advice and knowledge seeking ($\beta=-0.03$, ns). Therefore, hypothesis 4 could not be confirmed.

Looking at the proposed controls, integrity emerges as a positive and significant influence for knowledge seeking in all model specifications. This indicates that the value of knowledge depends on the perceived integrity of the community. In addition, effort has a significant negative effect on knowledge seeking. Members seem to experience little effort in searching for knowledge. In the specifications, the variable for knowledge sharing is positive and significant for knowledge seeking and exerts a robust influence over all four model specifications.

Discussion

The findings on knowledge seeking add to a better understanding of individual participation in online communities. Our results show that need for advice is a strong driver for member to seek knowledge in the online community. This result is to be expected, because a generic need for advice is the first and foremost important driver for knowledge seeking. Our results further show that knowledge seeking is influenced by individuals' identification with the group and seems to provide a common ground for participation in online communities. Next, we find a negative and significant direct effect of self-esteem on knowledge seeking. It seems that by seeking knowledge in online communities, the status on certain knowledge is called into a question for a person high in self-esteem. For a member with low self-esteem the same relation could be less dissonant because of a general lower self-worth. Interestingly, the results show a different picture when introducing self-esteem as a moderator to the relationship on need for advice on knowledge seeking. Self-esteem enhances the relationship between need for advice and knowledge seeking pointing towards a possible threshold for members with high self-esteem to seek knowledge. Members with high self-esteem do not fear losing their status or are ashamed of asking questions in online communities when they need advice. Thus, self-esteem needs to be present for higher levels of knowledge seeking to occur from need for advice. This result receives support from literature on help seeking in online communities (Cross et al. 2016).

No evidence of reciprocity was found indicating that knowledge seeking works without the expectance of reciprocal behavior. This result challenges the necessity to establish a norm of reciprocity to guarantee the functioning of communities (Faraj and Johnson 2011; Johnson et al. 2014). At the same time, the result points towards existing economic theory and experimental evidence that reciprocal behavior is created through social governance mechanisms that have their premise primarily in smaller and denser communities (Cox 2004; Henrich et al. 2010; Sethi and Somanathan 2003). In sum, seekers are driven by a need for advice and identification with the community, indicating that online communities work without the expectance of reciprocal behavior. Although individuals in large communities often have loose contacts, their knowledge seeking seems to depend heavily on the level of their self-esteem.

Additionally, knowledge sharing also influences knowledge seeking. This result points towards the notion that knowledge seeking is the default activity in online communities and that the flow communication only continues when knowledge is shared. Thus both behaviors are necessary for the overall functioning of an online community. Additionally, members who support boundary spanning behavior across organizations are more likely to show this behavior to keep the community going (Clement et al. 2017). Our findings also inform research that certain aspects lose their relevance when seeking knowledge in online communities. Reputation, a high effort, fear of criticism have long been shown to influence the participation in smaller and denser communities (Bouty 2000; Dahlander and Frederiksen 2012; Gal et al. 2014; Johnson et al. 2014; Kankanhalli et al. 2005; Sethi and Somanathan 2003). Career or peer issues do not seem to matter in larger communities and at the same time deviant behavior cannot be punished by a single group member. Although, these social pressure points have been considered crucial in the absence of hierarchical power, the knowledge seeking in online communities continues.

Theoretical Contribution

The results of this study add to previous research and advance knowledge on online communities (Hsu et al. 2007). First, we are able to shed light on the behavior of knowledge seeking in online communities. When individuals identify with the online community, they enter the community because of their identification with the community and seek knowledge. As shown, this behavior persists even in the absence of reciprocity in the community. Next, this study is singular in the way of measuring and analyzing knowledge seeking using a diverse sample of online communities that function beyond structural governance mechanisms. This differentiated analysis reveals different reasons that help to understand knowledge seeking in online communities. The significant effects demonstrate that community members, when making decisions about seeking knowledge, are not self-interested individuals who calculate every interaction based on a cost-benefit analysis, but are they individuals who identify with the community and do not seek knowledge unless there is a clear need. Further, the analysis suggests that models based on a simple need for advice for knowledge seeking behavior would lose sight of the interdependence of levels of self-esteem and therefore reduces prediction accuracy. This study

contributes to the modeling of resource seeking supported by online communities and leads to a deeper understanding of the reasons to take part. Lastly, our study is the first that sheds light on the reasons for searching for knowledge in online communities. While the body of knowledge offers a plenty of explanations why community members are actively sharing knowledge in online communities, studies on why people seek knowledge have remain limited. So far it seems to be common sense that need for certain knowledge is the only and predominant reason for why people search for knowledge in online communities (Zhao et al. 2016). Our results expand the body of knowledge by revealing that need for advice and identification with the community are highly relevant reasons for seeking for knowledge.

Limitations and Future Research

Like all empirical studies this investigation is subject to certain limitations that offer promise for future research. For one, due to the chosen population, the generalizability of the outcomes is limited. In smaller corporate communities, research alliances or managed user boards, the voluntariness of participation is going to be moderated by (social) governance regimes and career considerations discussed above. The double self-selection of participants into the community and then into partaking in the survey is likely to reproduce a sample that is skewed towards the most active members of these communities leading to a lower response rate. Future research could complement survey data with activity data on knowledge seeking from online communities in order to predict knowledge seeking behavior. This would also enhance the external validity of the data. In addition, future research could design studies that allow controlling for self-selection mechanisms. This can be done by integrating a broader variety of indicators whose means and distributions are known for relevant parts of the population, e.g. personality traits like the Big-five. Next, self-report data were used to map the behaviors of individuals. This means we used individual's perceptions to measure knowledge seeking, and their reasons for doing so. This could lead to common method variance (Podsakoff et al. 2003) affecting the observed relationships. Seeking from different sources such as secondary data from online communities or data from other participants could prevent the common method variance (Podsakoff et al. 2003). Furthermore, it would have been methodologically desirable to be able to use multiple items for the factors of direct and generalized reciprocity. In addition, it seems necessary to develop a comprehensive understanding of both knowledge sharing and seeking in online communities, probably derived from deeper and more detailed investigations into the interactions of these individual acts. Alternative study designs with pre-post within-subject designs or between-subject designs could help here to shed light on the questions why people start to participate in, or quit communities. Last but not least experimental designs mimicking corporate contexts or communities could be utilized to establish a micro-foundation of interaction.

Our findings also suggest additional avenues for future research. As organizations have become increasingly interconnected, a social network perspective of individuals in online communities would shed further light on their knowledge seeking behavior. One option might be to ask participants to list the most frequent relations in their network (Borgatti and Cross 2003) and why they seek knowledge from them. Alternatively, a combination of checkbox and an evaluation of the strength of ties when selected could be adopted to examine the extent to which the knowledge was accurate, helpful and useful. Because there might be variation in the quality of knowledge that individuals seek, this in turn could be influenced by their motives. In the same vein, the relationships are valuable resources (i.e. social capital) for organizations. According to the social capital view, links are established between organizations becoming the social capital resource. The social capital can be enhanced through online communities where knowledge is sought. These relations deserve more attention in future research.

Practical Implications and Conclusion

The results of this study have practical implications for operators of online communities. Understanding community members' motives for seeking knowledge is important because this understanding informs the design of web-based community platforms. By knowing the drivers for seeking knowledge, this information could help to systematically design tailored incentive systems and IT artifacts that in future would support community members' searching activities more efficiently. For example, when designing and moderating online communities in future an emphasis should be set on designing measures that enable identification with the group, for example, definition of clear boundaries of membership, "invitation only"-communities, or competitions and challenges with other groups or outgroup members.

Such artifacts would help strengthening the personal identification with the online group's core ideas. Further, our results reveal that community members with higher levels of self-esteem ask others for help only if they really feel to need the seek knowledge. Given that seeking knowledge is at the core of online communities, it is desirable to support this driver. When an online community's website is designed in such a way that it does not undermine knowledge seekers self-esteem, they may search knowledge more often and intensive in such communities. Thus, for those high in self-esteem, efforts to persuade them that seeking knowledge would not constitute an admission of failure may be beneficial for online communities.

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