Motivational factors of information exchange in social information spaces

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ABSTRACT

Research has shown that there are many barriers that hinder people to participate in online information exchange. We provide an overview about the research done so far and classify the found motivational factors. With two empirical studies we test the simultaneous impact of these factors in order to identify the most important ones. Study 1, a qualitative interview study with *potential users* investigates key motivational factors for information exchange. Study 2, a quantitative study with *users* of an established social information space relates all motivational factors to subjective and objective measures of participation in information exchange. We found that internal motivation, gain of prestige, quality and quantity of content and procedural fairness are the strongest motivational factors supporting participation, whereas time and effort requirements for contribution and fear of personal feedback are the strongest factors hindering contribution. Implications for theory and practice are discussed.

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1. Introduction

Collaborative learning and knowledge constructing is much more than exchanging information and sharing knowledge. However, all kinds of emergent processes only then can happen, if the individual users are willing to participate in the common activity and if they exchange the information they have (cf. Chou, Lin, Lu, Chang, & Chou, 2014). Thus information exchange is not a sufficient, but it is a necessary condition, that knowledge creation and collaboration happens (Earp, Ott, & Pozzi, 2013).

But it is just in an ideal world that members of learning groups or online communities are enthusiastic about information exchange and engage in information with great motivation. In reality quite the contrary is true: There is substantial research that considers information exchange as social dilemma (Cress, 2006; Cabrera & Cabrera, 2002; Dawes, 1980) and demonstrates that the motivation to engage in information exchange does not go without saying (Kimmerle, Wodzicki, & Cress, 2008).

In order to generalize across the special platforms, forums and communication tools we introduce the concept of "social information space". We generally define this as all kinds of digital environments, where people can contribute information and have access

to information provided from others. In such social information space people can rely on each others' contributions and knowledge construction can occur. This leads to the formation of a learning community where individuals voluntary participate to exchange their knowledge within informal learning settings, e.g. in the Web.

In the following we will provide an overview over the extensive research about barriers and motivators for knowledge exchange in such social information spaces. This research has identified many motivational factors that affect individuals' participation in the information exchange process. These factors can, depending on their nature, either increase or decrease motivation to engage in information exchange. The problem with this research is, that it's main results cannot easily be summarized and it does not provide a full picture about users' motivation for knowledge exchange in online communication settings. This is due to different weaknesses: Much of the research was carried out under controlled conditions in the laboratory. So it separated the different factors and isolated them artificially, in order to find causality of a focused factor without having to deal with confounds provided by other factors (e.g., Connolly & Thorn, 1990; Cress, Kimmerle, & Hesse, 2006; Kimmerle & Cress, 2008b; Riss, Cress, Kimmerle, Martin, 2007; Wodzicki, Schwämmlein, Cress, & Kimmerle, 2011). Other studies where done in the field, and thus in the real, complex word, but they also took into account only a limited number of potentially relevant factors (e.g., Ardichvili, Page, & Wentling, 2003; Borgatti & Cross, 2003; Chiu, Hsu, & Wang, 2006; Flanagin, Monge, & Fulk, 2001).

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Moreover, most of the hitherto studied participants had an obligation to participate in the information exchange (e.g., as part of their course) and thus cooperated a limited amount of time (Cho, Gay, Davidson, & Ingraffea, 2007). All these factors make it unclear whether the existing results can be adapted to situations, where people voluntarily take part in information exchange.

Our work therefore extends existing research about that in three aspects. First, we investigate users' motivation to exchange information in a situation where there is no obligation to participate. Second, we investigate all potentially relevant motivational factors simultaneously in order to identify which factors are most strongly related to information exchange. Thirdly, we investigate the individuals' perspectives on their motivation to participate (cf. Lin, 2011). We compare the subjective, self-reported (perceived) participation in information exchange with the objective participation measured by log files. Taken together, we investigate three research questions: (1) Are the motivational factors identified in the literature meaningful in a real-world context where participation is voluntary? (2) Which motivational factors have the strongest relation to participation in social information spaces? and (3) How do users of a social information space perceive their participation in comparison to their actual participation behavior?

In the current paper we first give an overview about factors that are discussed in the literature. We assign them to four clusters (for a similar approach, see Cabrera & Cabrera, 2002): environmental, personal, interpersonal and socio-cultural factors. We then present two studies to test their influence in a real-world setting. We did this with an information exchange platform of a large, decentralized non-governmental organization. This platform was implemented to support staff and volunteers to exchange best practices, discuss current problems and share new ideas (for an overview on the used platform see Matschke, Moskaliuk, Arnold & Cress, 2010).

In the qualitative Study 1 we did interviews with *potential users* and compared the results with the factors we had identified in the research literature. In the quantitative Study 2 we asked people using the platform about their motivation with regard to all identified factors. We related these to their subjectively felt participation as well as to the objective participation, which we could extract from the log files.

2. An overview about motivational factors of information exchange

There is a wide variety of predictors for computer use in general and information exchange in particular. Certain personality characteristics, such as cooperativeness, self-monitoring and a need for self-presentation have been found to facilitate cooperation in information exchange situations (Jadin, Gnambs, & Batinic, 2013; Kimmerle, 2006; Kimmerle & Cress, 2008a). Some factors moderate these influences, e.g., if contributions cannot be identified, people with high self-presentation needs become uncooperative in information exchange (Kurzban & Houser, 2001; Kimmerle & Cress, 2008a). However, personality characteristics are hard to change and thereby information on personality characteristics cannot help community facilitators who try to design optimal circumstances for information exchange. We will therefore focus on changeable motivational factors. We identified 36 factors reported in the literature and classify them into four types: environmental, personal, interpersonal, and socio-cultural aspects (see Table 1).

2.1. Environmental factors

The environmental factors describe characteristics of the information space itself that users encounter. Building on several models of cooperative technology acceptance (e.g., Davis, 1989; Kshetri, 2005; Lazar & Preece, 2002; Nitithamyong & Skibniewski, 2007; Reisberger & Smoknik, 2008; Saveri, Rheingold, & Vian, 2005), Schulzki-Haddouti (2008) identifies environmental factors in the motivation to participate in cooperative technology. She suggests that the perception of a critical *quantity of content* motivates new users to become engaged in cooperative technologies. Besides, the *usability* as well as the *stability and security,* and the *privacy and clarity in legal rights* have been identified as important factors in active participation. As a basis for the psychological factors to operate, these central factors will be included into our studies.

When viewed from the cost-benefit perspective exchanging information is costly. The participation in information exchange with social information spaces requires *time* and *effort* (Connolly & Thorn, 1990; Reid, Malinek, Stott, & Evans, 1996). The information space's utility value is maximal if many persons contribute information (i.e., *quantity*) that is relevant for as many participants as possible (i.e., *quality of content*; Cress & Martin, 2006). In a similar vein, the *activity* (in the sense of many contributions) and *traffic* (in the sense of quick answers to one's contributions) contribute to the subjective value of the social information space and is a strong motivational factor. A good *structure of the information space* is important, so that the social information space should be able to capture a large amount of information (Cress, 2006). Unstructured information will frustrate potential contributors and hinder their participation. Likewise, obsolete information would not only reduce the understanding of the knowledge, but also reduces perceived quality in the content and trust in the community (see interpersonal factors), and thus hinder participation.

Even though not in the focus of our empirical studies, *external reinforcement* is a classic means to increase motivation. If participants receive bonuses (e.g., for every piece of information

Table 1
Environmental, personal, interpersonal, and socio-cultural factors for the motivation to participate.

Environmental factors	Personal factors	Interpersonal factors	Socio-cultural factors
Usability	Lack of understanding	Direct contact	Group identification
Stability and security	Description difficulties	Interpersonal trust	Knowledge perceived as private/organizational good
Privacy and clarity in legal rights	Internal motivation	Fear of exploitation	
Time requirements	Self-efficacy expectation	Reciprocity expectation	Knowledge awareness
Effort requirements	Tool competence	Fear of loss of knowledge advantage	Guidelines for contributions
Quantity of content		Privilege in information	Organizational culture to exchange information
Quality of content		Fear of losing face	
Activity		Gain of prestige	Expectation of others' cooperativeness
Traffic			Collective efficacy expectation
Structure of platform			Instrumentality for organizational goals
External reinforcement			
Anonymity			
Identifiability			
Future prospects			