Extending lead user theory to users' innovation-related knowledge sharing in the online user community: The mediating roles of social capital and perceived behavioral control

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A B S T R A C T

The research on users as a source of innovation has been coming into blossom and the studies about the effect of users' lead userness on their innovation-related activities are drawing more and more attention from both academic and business circles. However, there have been few empirical studies exploring the relationship between users' lead userness and their innovation-related knowledge sharing behavior in the context of online user community and the mediating effects of users' social capital and their perceived behavioral control on this relationship. By empirically analyzing the 140 data collected from an online user community that is used as an important source of innovation for a company with the structural equation modeling analysis through the partial least squares method, this study reveals that users' lead userness has a positive relationship with their innovation-related knowledge sharing in the online user community and users' social capital and perceived behavioral control jointly and fully mediate this positive relationship. Based on the new findings, this study is expected to provide useful implications which can contribute to widening and deepening the research stream about the effect of users' lead userness on their innovation-related knowledge sharing in the online user community.

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1. Introduction

The role of user communities in product and service innovations has received a lot of attention because they can be used as an effective and efficient external source of innovations (Pisano & Verganti, 2008; Hienerth, von Hippel, & Berg Jensen, 2014; Von Hippel, 2005). In user communities, users not only share their innovation-related knowledge but also develop it by giving and receiving feedback from other users (Pisano & Verganti, 2008; Franke & Shah, 2003; Hau & Kim, 2011), which makes it possible for the communities to work as a major source of innovations (Von Hippel, 2005; Von Hippel, 2007; Jeppesen & Molin, 2003; Hau & Kim, 2011). In addition, rapid advances in information technology (IT) have made it easier for more and more users to participate in online user communities and perform innovation-conducive activities such as innovation-related knowledge creation and sharing through

various digital devices such as smartphones and tablet PCs (Hau & Kim, 2011; Sawhney, Verona, & Prandelli, 2005). Therefore, online user communities have been drawing an increasing number of attention from academic scholars as a vital source of product and service innovations and many firms including IBM, Audi, Microsoft, BMW and Nokia are trying to effectively and efficiently absorb users' innovation-related knowledge through online user communities (Mahr & Lievens, 2012; Füller, Mühlbacher, Matzler, & Jawecki, 2009).

This study attempts to empirically analyze the relationship between users' lead userness and their innovation-related knowledge sharing in the online user community, focusing on the mediating effects of users' social capital and perceived behavioral control between the relationship. Many prior studies have pointed out that users' lead userness is a critical factor to their innovation-related activities such innovation-related knowledge owing, creating, and sharing (Franke, von Hippel, & Schreier, 2006; Schreier & Prügl, 2008; Von Hippel, 2001; Lilien, Morrison, Searls, Sonnack, & von Hippel, 2002; Von Hippel, 2007; Von Hippel, 1986) and also plays a crucial role in making them in the context of online user communities (Colazo, 2014; Mahr & Lievens, 2012; Hung, Chou, & Dong, 2011; Marchi, Giachetti, & de Gennaro,
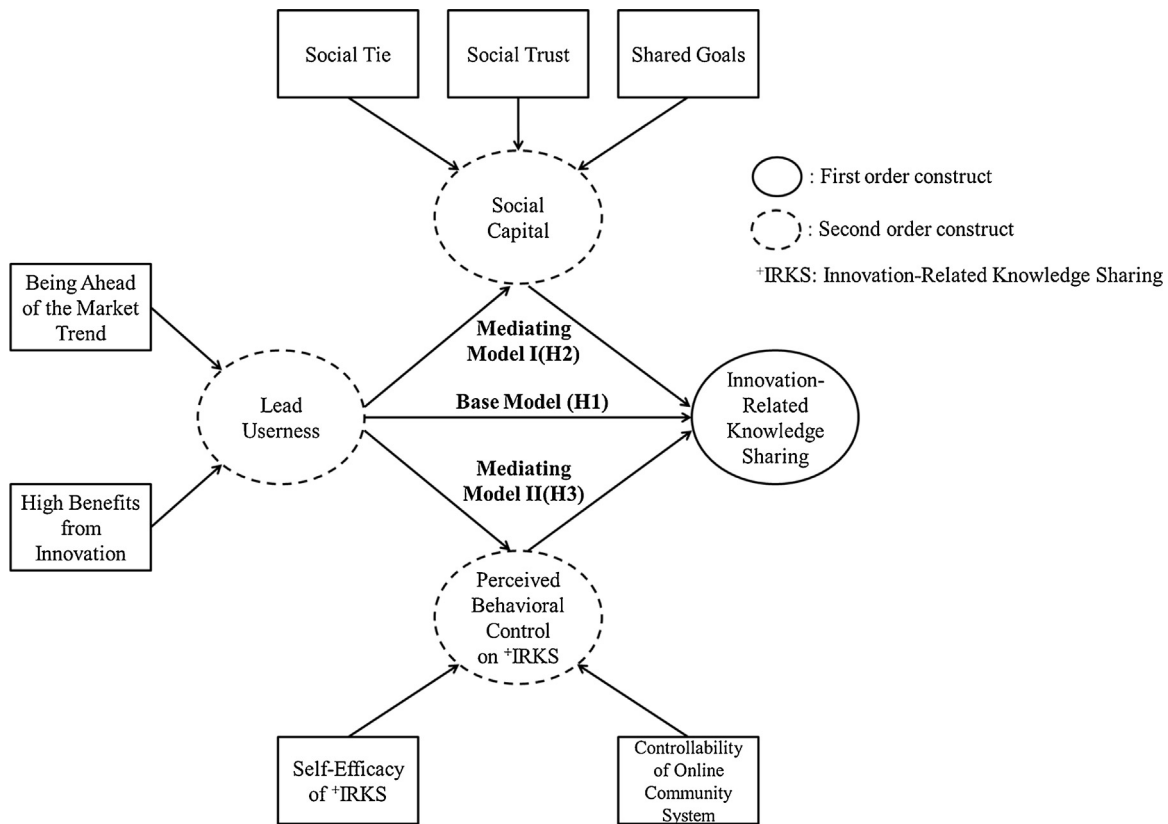
Fig. 1. The research model.

2011). However, there have been few studies empirically ana-lyzing the relationship between users' lead userness and their innovation-related knowledge sharing in the context of the online user community and considering the potential mediators such as users' social capital and perceived behavioral control between the relationship in their empirical analysis. Therefore, in order to deepen and widen the research stream related to the lead userness and innovation-related knowledge sharing in the online user com-munity, this study tries to answer the three research questions as follows.

(i) What is the relationship between users' lead userness and their innovation-related knowledge sharing?
(ii) How does users' social capital mediate the relationship between their lead userness and innovation-related knowl-edge sharing?
(iii) How does users' perceived behavioral control on their innovation-related knowledge sharing mediate the relation-ship between their lead userness and innovation-related knowledge sharing?

This study empirically tests three hypotheses, developed from the combination of the lead user theory, the social capital the-ory and the social cognitive theory, concerning these research questions based on structural equation modeling (SEM) analysis through the partial least squares (PLS) method by using the data from an online survey of 140 members of an online user community which is used as an external source of a firm's innovation-related knowledge.

This paper is made up of six sections. This first section intro-duces the research questions with the research background and purpose of this study. The second section presents the literature review on the prior studies related to the topic of this research. The third section provides the three hypotheses and research model for this study with the theoretical background for them. The fourth sec-tion explains the research methodology used for this study. The fifth section reports the empirical analysis results and the last section summarizes the major findings of this study, discusses the impli-cations and contributions from them, and provides the suggestions for future research based on the limitations of this research.

2. Literature review

The research on users as a source of innovation has been coming into blossom (Bogers, Afuah, & Bastian, 2010), sparking var-ious studies about the relationship between users' lead userness and their innovation-related activities especially in the context of online communities. For example, Colazo (2014) empirically tested the effectiveness of the problem-solving efforts by the lead users in three problem-solving stages (problem detection, analysis and removal) on developing the C programming language. The ordi-nary least square regression results from this study revealed that problem detection, analysis, and removal efforts by lead users had inverse association with development productivity, whereas their problem detection and analysis efforts had direct relationships with product popularity based on the 29 project team level data. By using qualitative (netnography) and quantitative (ANCOVA and MANCOVA) methods, Mahr and Lievens (2012) showed that lead users' solution-focused contribution provided the highest value in their innovation-related knowledge creation. Hung et al. (2011) provided the empirical evidence that innovative users were more likely to show the lead userness and they were more likely to use user-toolkits to generate innovations to satisfy their needs. Marchi et al. (2011) empirically revealed that users' product knowledge