
Research-in-Progress

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Introduction

Knowledge represents one of the most valuable resources by which both individuals and organizations leverage and extract value resulting in benefits such as increasing individual’s domain expertise, improving work performance, and achieving competitive advantage (Kulkarni et al., 2007). Knowledge has been defined as “information combined with experience, context, interpretation, and reflection” (Alavi & Leinder, 2001).

In contemporary information systems literature, there exists a general agreement about the value and importance of knowledge management (Alavi & Leidner, 2001; Grover & Davenport, 2001). Traditional KM literature focuses mostly on knowledge creation and dissemination within organizations.

Due to the recent advancements in information and communication technologies, online social structures which refer to “networked social environments that rely on computer mediated communication systems” are emerged with the primary purpose of knowledge exchange (Butler, B. S., 2001). Known by a variety of names, e.g., virtual, electronic, or online communities, our understanding of how and why people share knowledge through the computer-mediated communication have been fundamentally altered by studying these online social structures.

Extended from network of practice which is characterized by a large, loosely knit and geographically distributed group of individuals engaged in a common practice (Brown & Duguid, 2001), Electronic Network-of-Practice (ENoP) is described as ‘a special case of online social space, where knowledge sharing occurs through primarily computer-mediated communication channels’. More formally, ENoP is defined as self-organizing in that participation is open to all and voluntary in nature. This facilitates knowledge exchange by creating a climate of open discussion and collaboration. Knowledge is considered a public good where members of the community collectively contribute to its provision and all members may access the knowledge provided (Wasko & Faraj, 2001).

Due to its openness and volitional nature, participants in ENoP are typically strangers (Kollock & Smith, 1996). There is no controlling mechanism and quality assurance of the requested results for knowledge seekers, similarly there is no guarantee of something in return (reciprocity) to knowledge contributors for their contribution to others.
Virtual Communities and Virtual Worlds

Despite the growing interest in online social structures such as virtual community-of-practice, some researchers (Alavi & Leidner, 2001; Orlikowski, 1996; Wasko & Faraj, 2005) argue that the creation of an online social space does not guarantee for knowledge exchange. In recent years, some IS research in knowledge management has been conducted to address this concern about user acceptance of online social structures for knowledge exchange (Kankanhalli, 2005; Wasko & Faraj, 2005).

However, the success of electronic community depends primarily on whether members are willing to continue to participate and share their knowledge with others. Clearly, as long as many participants are willing to stay and contribute their knowledge in the community, the likelihood of connecting individuals who are able and willing to help, will be improved. Therefore, it is important to identify what affects members’ decisions to continue to stay and share in an electronic community.

Prior research on KM has highlighted various factors that affect individual’s willingness to share knowledge, such as costs and benefits, incentive systems, extrinsic and intrinsic motivation, organizational climate, and management championship (e.g., Bock & Kim, 2002; Bock et al., 2005; Kankanhalli et al., 2005; Wasko and Faraj, 2005). However, there has been little research focused on understanding knowledge contributors’ intentions to engage in future participation once they become members in the electronic communities.

Past research reported that most electronic communities are having difficulty with keeping members actively involved in the network (Sangwan, 2005). Current research pays little attention on individual’s intention of future participation in these online societies. Since members’ continuous voluntary contribution is critical to the sustainability of an electronic environment, it is timely to investigate what drives members’ motivation to continue knowledge sharing in the electronic communities.

In this study, we focus on knowledge sharing behavior in the Electronic Networks-of-Practice. We will examine the motivations that drive individuals to continue sharing knowledge in the open content contributing network, specifically Wikipedia.

Literature Review

Before developing the theoretical model of continuance knowledge sharing behavior, we first review previous research on IS continuance, given the fact that KM is a subset of IS.

The literature review has two main objectives: (1) to introduce existing theories of IS continuance which could explain continuance behaviors in a general sense; (2) to examine the KM continuance study on prior research by identifying the key variables that determine continuance knowledge sharing behavior.

IS Continuance Research

While most prior IS research has focused on initial IT adoption, long-term IT usage or continuance has recently gained increased attention among researchers as IS success depends on whether users are willing to continue using a particular IS (Bhattacherjee, 2001; Bhattacherjee & Prekumar, 2004).

The concept of IS continuance refers to ‘the behavioral patterns reflecting continued use of a particular IS’ (Bhattacherjee, 2001). Since continued use, or continuance, is generally considered to be an important factor in assuring successful system implementation, a stream of research investigates this phenomenon from rational lens (mainly TRA or TPB based studies) such as perceived confirmation and satisfaction (Bhattacherjee, 2001, Limayem et al., 2003, Hsu et al, 2004); prior usage experience (Kim & Malhotra, 2005); perceived enjoyment (Thong et al., 2006) and information usefulness (Jin et al., 2007). Other studies in this research stream have focused on issues of e-learning performance and success such as information accessibility and community adaptability features (Teo et al., 2003); information quality (Roca et al., 2006); e-learning course quality (Sun et al., 2008); and e-learner’s satisfaction (Lee, 2010). There are newer studies that also explore non-rational cues (e.g. habitual or emotional responses) affecting continued usage (Ortiz de Guinea & Makus, 2009; Mettler, T., 2012). In fact, IS literature generally assumes continuance intention as a result of some mixture of rational analysis and emotional response. (See Table 1 Appendix)
Prior research on Knowledge Sharing

Despite the noteworthy contributions of these influential studies on IS continuance, there has been little continuance research in the KM area. As highlighted before, past research on KM primarily focused on the initial adoption of knowledge sharing behavior such as social capital (Chiu et al., 2006); identification-based trust (Hsu et al., 2007); community loyalty (Lin et al., 2009); and sharing culture (Yu et al., 2010). (See Table 2 & 3 Appendix)

Recently, a few researchers have studied continuance intention perspective in the context of electronic communities, such as reputation, knowledge quality and system quality, knowledge self-efficacy, satisfaction, habit, and playfulness, etc. (e.g. Tiwana & Bush, 2005; Chen, 2007; Cheung & Lee, 2007; Limayem et al., 2007; and Chiu et al., 2011). (See table 2 & 4 Appendix).

Based on the above literature review, it is observed that KM research has yielded substantial theoretical explanations on the motivations of an individual to share knowledge in various communications, each with different sets of influential factors such as contextual, technological, and motivational factors. Social Cognitive Theory has been widely used and validated for human behavior in numerous contexts, yet it has not been applied to continuance knowledge sharing behavior from both personal and environmental perspectives so far.

In order to fill in this research gap, this study intends to develop a theoretical research model integrating social cognitive theory and cognitive evaluation theory to examine the factors affecting users’ intention to continue sharing knowledge in the ENoP, in the case of Wikipedia. Specifically, we attempt to answer the following questions:

- Do the characteristics of the underlying environmental factors affect the individual’s motivation?
- Do the individuals’ motivations adequately explain their intention to continue sharing knowledge in Wikipedia?

The Research Context

This research chooses to study Wikipedia, the largest online encyclopedia, more specifically the group of people who are contributing, administering, and editing the collective knowledge of this online encyclopedia. Wikipedia defines itself as “a multilingual, Web-based free content encyclopedia project. The name is a portmanteau of the words wiki and encyclopedia.” The content of the Wikipedia is written collaboratively by volunteers, allowing most articles to be changed by almost anyone with access to the Web site. Since it was founded in 2001, Wikipedia has grown to include over 4.4 million articles in English and 287 different languages1. Nowadays, Wikipedia is one of the most successful examples of large-scale collaborative content development.

We choose to study Wikipedia for several reasons. First, although Wikipedia is one of the most successful examples of open content development, according to the statement2 on Wikipedia ‘Wikipedia showed an exponential growth rate of the number of Wikipedia contributors during the early years. By 2009, the growth of the community slowed down’. While some studies have been done with regard to the motivations of Wikipedia contributors, to our understanding in the context of ENoP, very rare empirical study focuses on continuance knowledge sharing behavior in Wikipedia.

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Virtual Communities and Virtual Worlds

Second, Wikipedia is an open source project with a dynamic environment where people join and leave the network or collaborate on making knowledge available to a larger audience with common interests. Wikipedia consists of a number of administrators\(^3\) (a small number of experts who oversee the content quality) and editors\(^3\) (people who contribute by editing existing articles or uploading new knowledge), thus which factors are motivating to contribute knowledge for Wikipedians\(^3\) (people who write and edit articles for Wikipedia projects) as diverse users is an interesting question for current research in order for the result finding to be generalizable to open content communities.

Third, since this study focuses on behavioral examination of individual’s dynamic reaction to environmental events (such as feedback, rewards, and communications), Wikipedia enables analysis of how these environmental factors enhance individual’s intrinsic motivation for future participation in this voluntary setting.

Some previous research has been published in the last years on Wikipedia phenomenon. However, most work focused on technical aspects in the context of quality of Wikipedia such as content evolution, formality of language used, quality assessment of articles, inequality of contribution in different Wiki languages (Emigh & Herring, 2005; Viegas et al., 2007; Hu et al., 2007, Ortega et al., 2008).

Most believe that Wiki success probably depend on the low entry barrier for new authors. With the easy-to-use and user-friendly interface that Wikipedia provides to authors, they can start to contribute as soon as their first visit. It is worth noting that, although anyone can contribute to the Wikipedia, the continuance contribution is uncertain due to members’ different intentions (Kittur et al., 2007). Unfortunately, little attention is paid to investigate users’ behavior in open content community like Wikipedia.

For example, Forte & Bruckman (2005) interviewed 22 volunteer Wikipedia writers and revealed that the incentive system motivates contributions to the open content community.

Using theories from social psychology and sociology literature, Zhang & Zhu (2007) examined the performance of contributors in Wikipedia and their empirical findings showed that intrinsic motivation plays an important role in open content communities.

Cho et al., (2010) explored how and why people participate in collaborative knowledge-building practices in Wikipedia. The study revealed that a sense of belonging is related to knowledge-sharing intentions indirectly through different motivational and social factors such as altruism, subjective norms, knowledge self-efficacy, and generalized reciprocity.

Most recently, Majchrzak et al. (2013) explored the Wiki affordance of enabling shaping behavior within organizational intranets supported by Wikis. They examined the role of three knowledge resources of a Wiki contributor: knowledge depth, knowledge breadth, and transactive memory system and reported that all resources have differential effects on shaping, in terms of common user behavior and contributors’ perceptions on reuse of their knowledge in the Wiki for organizational improvement.

In order to understand the sustainability of ENoP in general, and users’ intention to continue sharing knowledge in Wikipedia in particular, we intend to propose a theoretical research model based on SCT and CET to understand individual’s continuance behavior in the open content community.

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What Drives Continued Sharing Knowledge in the ENoP?

Theoretical Background

Based on the extant literature review, this study will examine the motivations by which users assess their knowledge sharing behavior and make the decision to continue or discontinue such behavior. The concepts of knowledge sharing and individual motivations are addressed as well as theoretical foundation of the present study is reviewed.

Knowledge Sharing

Knowledge sharing is a key element of knowledge management. It embeds the notion of “willingness to share” or “voluntary act of making information available to others” (Davenport & Prusak, 1998).

Disseminating one’s acquired knowledge to others in an organization is termed knowledge sharing behavior by Ryu et al. (2003). According to Davenport & Prusak (1998), without one’s own interest, individual would mind sharing their knowledge. As the electronic networks can only be sustainable if participants maintain continuous participation in the community, the main focus of this study is to examine continuance behavior in ENoP. Thus “Continuance intention to share knowledge” is defined as “the likelihood that a user will continue sharing knowledge in the Electronic Network-of-Practice”.

Individual motivations

According to socio-economic and social exchange theories, people engage in social interaction with the perception of reciprocity (expecting something in return from others) for their contribution such as creating valuable knowledge (Nahapiet & Ghoshal, 1988). Because of this private or social reward (e.g. recognition, respect), individuals incline to participate in social activities.

Based on the extant literature, we would like to propose most influential motivational factors such as reputation, knowledge self-efficacy, and sense of community which might be potentially triggered by environmental cues and drive people to share knowledge in ENoP, with regards to the context of this research.

Social Cognitive Theory (SCT)

Social cognitive theory is a commonly utilized model in IS literature with demonstrated validity in examining human behavior. In SCT, Bandura (1986) explained a person’s behavior with a triadic model in which environmental factors, personal cognition and behavior interact and influence each other bi-directionally. (Figure 1)

A key driving force in this dynamic interaction that shapes human behavior is self-efficacy which refers to “individuals’ judgments of their capabilities to perform certain activities”. Generally, the perceived self-efficacy is a primary element in making person motivated and adopted positive attitude (Bandura, 1986). Having high self-efficacy makes people more likely to perform related behavior than having low self-efficacy. There have been some studies examining the role of self-efficacy in both information systems (e.g. Compeau & Higgins, 1995; Hsu et al., 2004) and knowledge management (e.g. Bock & Kim, 2002; Kankanahalli et al., 2005; Hsu et al., 2007) domains.
Cognitive Evaluation Theory (CET)

Cognitive evaluation theory is a sub theory of Self Determination Theory (SDT) which proposed a variation of individual’s intrinsic motivation affected by social environment (Deci & Ryan, 1985). SDT distinguished motivations based on two aspects in terms of intrinsic motivation, which refers to “doing something because it is inherently interesting or enjoyable”, and extrinsic motivation, which refers to “doing something because it leads to a separable outcome”.

CET explains that environmental events (e.g. feedback, rewards, and communications) can enhance intrinsic motivation for an action which makes people competent and satisfied (Deci & Ryan, 1985). This is why incentive systems are promoted by practitioners for successful knowledge management.

In one sense, if electronic community members can expect extrinsic benefits such as promotion, monetary rewards, sponsorship, or learning opportunity from their contribution, they may be more inclined to share knowledge (Bock & Kim, 2002; Kankanhalli et al., 2005). In other sense, if members can expect intrinsic benefits such as power, social recognition, or self-satisfaction, then they may also enjoy knowledge sharing (Kankanhalli et al., 2005).

In the context of open content community like Wikipedia, monetary rewards are not expectable since participation is voluntary in nature. So, we will focus on how intrinsic benefits (such as performance feedback, social rewards) affect individuals’ motivation to continue contributing their knowledge in Wikipedia in this study.

Research Model and Hypotheses Development

Based on the above theories, we propose a theoretical research model as shown in Figure 2. Knowledge sharing behavior in the ENoP is explored by adopting a SCT based model, incorporating Cognitive Evaluation Theory. It is to examine whether the environmental factors (feedback, rewards, and communication) influence the individual’s motivations in terms of reputation, knowledge self-efficacy and sense of community as personal cognitions thus consequently affect the continuance knowledge sharing behavior.

![Figure 2 - Research model](image-url)
Reputation

Reputation is one of the prominent social awards that influence social interaction (Coleman, 1990). Empirical studies confirmed that gaining reputation makes strong motivation for active participation in electronic communities (Kankanahalli et al., 2005; Wasko & Faraj, 2005).

Reputation refers to “an individual user's recognition as a valuable member among the peers of the electronic community” (Tiwana & Bush, 2005). The authors reported that members intend to maintain their reputation by continuance participation in an expertise-sharing network system.

In the context of Wikipedia, online identities of registered members are attributed to respect, trust, and appreciation by their peers. Individuals value reputable identity as a true reward for their devoted accomplishment. By making constructive edits, Wikipedians earn reputation by other users which motivates people to make significant contribution to Wikipedia.

For example, Wikipedia awards such as “Featured Articles” are given to the Wikipedia editors for their outstanding articles, posting on the front page of Wikipedia nominated by other members of the community. This reputation status can enhance the motivation for continuance contribution to the community. It is suggested that individuals who earn a respectable reputation are more likely to continue sharing their knowledge in the social network as they tend to maintain status within a community. Therefore, it is hypothesized that:

H1: Individual user’s reputation among peer users of ENoP is positively related to their continuance intention to share knowledge on it.

Environmental Factors

Based on CET, environmental events (e.g. feedback, rewards, and communications) that allow satisfaction and make competence which can enhance individual’s intrinsic motivation to perform an action (Deci & Ryan, 1985).

Feedback

Feedback is defined as “an advice, criticism, or information about a person’s performance of a task” (Deci & Ryan, 1985). Individual’s achievement can be affected by feedback which makes them a sense of competence rather than own judgment (Barr & Conlon, 1994).

According to CET, empirical studies evidenced that positive feedback enhanced person’s intrinsic motivation as it creased perceived competence (e.g., Deci, 1971; Harackiewicz, 1979), whereas negative feedback decreased it (e.g., Deci & Cascio, 1972). It is suggested that perceived self-efficacy is determined by external feedback as people are likely to boost up their performance if others offer useful advice.

In the context of ENoP, some systems like ‘user rating system’ allows members to check the status of their contributions facilitated by the features such as ‘vote’ or ‘comment’ options for a particular post which would grow their reputation status. Also, Wikipedia authors receive feedback when others edit their created articles. Having a sense of interest by other users and receiving constructive criticism makes them increase their perceived competence. Hence, it is hypothesized that:

H2a: Feedback is potentially related to individual’s reputation.

H2b: Feedback is potentially related to individual’s knowledge self-efficacy.

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*Online dictionary*
Rewards

Reward refers to “the degree to which one believes that one can have extrinsic incentive due to one’s knowledge sharing” (Bock & Kim, 2002). Reward is a positive feature of the KM process. There is a likelihood of knowledge sharing when people see incentives over costs (Argote et al., 2003).

Prior research reported that organizational rewards (salary increment, bonuses, job security, promotions and career enhancement) were effective in shaping employee’s attitude towards knowledge sharing (Bock et al., 2005; Kankanhalli et al., 2005).

In the context of open content community, social rewards are considered important motivators in order to encourage individuals’ knowledge-sharing behaviors since members cannot expect monetary reward in voluntary setting. Social reward refers to “something that causes a behavior to increase in intensity”, such as status, image, respect and glory which can be facilitated to the benefits of the users (Hoist et al., 2006).

Wikipedia employs some social rewarding mechanisms in order to achieve the active participation of users, such as ‘amount of references’ where the greater the use of references, the grower the value of an article, ‘most viewed articles’ (of the week or month) for which the visits of users are automatically counted, and ‘barnstar awards’ by which users can freely award each other as a show of interest or appreciation. As individuals earn rewards from members, they will gain the reputation eventually.

According to CET, it is suggested that if users believe their knowledge is praised by the community in terms of some rewards, their perceived competence of knowledge will increase, thereby inclining to continue sharing knowledge. Therefore, it is hypothesized that:

H2c: Reward is positively related to individual’s reputation.
H2d: Reward is positively related to individual’s knowledge self-efficacy.

Communication

Communication refers to “social interaction among members in a community”. Social interaction is “the process by which virtual community members act toward or respond to one another” (Chen, 2007). IS researchers generally agreed that such kind of social interactions among people advances knowledge sharing (Bock & Kim, 2002).

There exist some evidences that social interactions encourage a sense of commitment among network members in order to perform collective action. Knowledge sharing is facilitated by social interactions which help maintain active membership (Wasko & Faraj, 2005).

In this context, Wikipedia as a collective project necessarily creates a community of contributors who work towards a common goal – “the development of a reliable and free encyclopedia”. Wikipedia makes a collaborative effort in ‘editing’. A strong sense of relatedness among Wikipedia editors are formed by facilitating collaborations. Wikipedians develop the content, edit the articles, and assign different tasks among them. Through this interaction, the feeling of relatedness makes them into one community.

A member’s sense of belonging to a group (sense of community) is grown when this community meets its needs through active participation and experience which in turn fosters a motivation to contribute knowledge as a collective good (Stacey, 2007).

Furthermore, through social interactions by communication, the depth and breadth of individual’s knowledge will be increased by efficient mutual exchange (Nahapiet & Ghoshal, 1998). By creating or editing an article on a specific subject, users engage in discussion and argument, which expand their body of knowledge, thereby increasing their perceived competence (self-efficacy). Hence, it is hypothesized that:

H2e: Communication among members of the ENoP is positively related to individual’s knowledge self-efficacy.

H2f: Communication among members of the ENoP is positively related to the sense of community.

**Knowledge Self-efficacy**

Social cognitive theory posits that people tend to choose the capable behavior with the extent of self-efficacy which also influences the sustainability of that behavior (Bandura, 1986). Knowledge self-efficacy is termed as “individuals having confidence that their knowledge can help other members in virtual communities” (Kankanhalli et al., 2005). It is a driving force of adopting the attitude towards knowledge sharing.

KM research has been recognized the importance of knowledge self-efficacy on individual’s knowledge sharing intention (Bock & Kim, 2002; Kankanhalli et al., 2005; Hsu et al., 2007). By sharing knowledge, people gain confidence and increase self-efficacy to share useful information to others. Thus, knowledge sharing is promoted by knowledge self-efficacy.

There is also a positive relationship between knowledge self-efficacy and continuance intention. Cheung & Lee (2007) found that knowledge self-efficacy significantly affects member’s continuance intention to share knowledge in virtual professional community (VPC).

In this context, if the users perceived that their knowledge is being facilitated by collaborations or recognized by feedback from other members or rewarded by the community, it will increase their competence that their knowledge is useful and valuable for other people, thus they are more likely to continue knowledge sharing in the ENoP. Hence, it is hypothesized that:

H3: Knowledge self-efficacy is positively related to continuance intention to share knowledge in the ENoP.

**Sense of Community**

A member’s sense of belonging to a group which refers to ‘sense of community’ is “a sense of emotional involvement with the group” (Bagozzi, & Dholakia, 2002). Having sense of community is important to the fact that if users lack sense of belonging to the community, there might be no involvement or participation in social network (Roberts, 1998).

The conceptual definition of sense of community has been generally used to examine virtual communities and online societies. Some researchers have studied the relationship between the sense of belonging and behavioral intention to return using virtual communities (Teo et al., 2003; Lin, 2007). Jin et al. (2007) reported that members’ continuance intention is influenced by their sense of belonging to the virtual community.

It is suggested that if an individual sees himself as a member of an ENoP, he/she will be more likely to adopt a positive attitude toward the community and develop a continuance intention to share knowledge in the community. Thus it is hypothesized that:

H4: Users’ sense of community is positively related to their continuance intention to share knowledge in the ENoP.
Research Methodology

Since this study investigates individual’s motivation triggered by environmental cues to continuance contribution in Wikipedia, self-assessment data is chosen for behavioral examination apart from recorded user data from Wikipedia. Due to geographical dispersion of the members, online survey methodology will be used to collect data, and test the hypotheses empirically. The choice of methodology is influenced by the intent of better generalization of results (Dooley, 2001). Individual (registered) user of the English Wikipedia is designed as the unit of analysis in this research.

Scale Development

For KM research, empirical study on continuance behavior has not been prevalent yet, thus it is necessary to develop some measures for a new construct OR modify based on pre-validated scales. In order to measure the same construct, researchers are recommended to apply existing quality questions designed by others (Xu & Chen, 2006). To test the research model, previous scales will be used for the seven constructs that are drawn from established measures in IS or KM literature and reworded appropriately for this study. In order to achieve construct validity and reliability, each construct is measured by a few items. All scale items will be used seven-point Likert scales ranging from 1 (strongly disagree) to 7 (strongly agree).

- Reputation items are adapted from Wasko & Faraj (2000; 2005). The items are slightly modified to fit the context of knowledge sharing in Wikipedia. Feedback items are self-developed measures to fit the requirement of Wikipedia context. Reward items are adapted from Bock et al., (2005) and modified in the context of Wikipedia reward policy. Items for measuring Communication focus on social interactions in terms of close relationships, time spent in collaboration, and frequent communication with other members, followed by Tsai & Ghoshal (1998). Sense of Community items are borrowed from McMillan & Chavis (1986). Items measuring knowledge self-efficacy are adapted and modified from Kankanahalli et al. (2005) by slightly rephrasing the words suitable to the context of Wikipedia. Continuance intention to share knowledge is measured by the items adapted from Bhattacharjee (2001). The initial items intend to measure respondents’ continuance intention to share knowledge in Wikipedia as opposed to using any alternate means, such as professional virtual communities. The fourth item is to assess individual’s overall discontinuance intention (worded negatively with respect to eliminate potential common-method bias).

In order to verify the instrument, a pre-test will be carried out by asking some experienced peers in sharing knowledge in online communities, particularly open content development like Wikipedia, to attempt the survey questionnaire. Casual discussion will be followed on revising the questions where necessary to improve the validity of the instrument. (See Table 5. Appendix)

Data Collection Plan

Survey data will be collected from registered users of English Wikipedia. Sampling data can be obtained from Wikipedia database dumps on the public domain that is made available for all Wikipedia projects by Wikimedia Foundation.

This study will use archival data from the database stubs to obtain metadata (such as the identity of registered editors, timestamp of edits, etc.) for every English Wikipedia article updates. All usernames from the database will include in a sampling frame.

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6Database dump service – Routinely back up process of the database by exporting data to an external storage file is known as ‘dumping’

An online survey system will be hosted on the school webpage in order to collect the data. Survey questionnaire is set to take about 10 minutes in order to avoid low response rate. When launching the survey, the sampling units will receive an invitation on their user talk pages along with a link to the online survey. Eligible respondents will be rewarded 10 dollar check for their participation as an incentive.

**Data Analysis**

The data analysis will be performed using partial least squares (PLS), because of its ability to specify the relationships among the conceptual factors of interest as well as to include multiple measures for each construct (Chin, 1998). Moreover, due to the formative nature of measures in the model, PLS is better suited for testing moderation effects (such as Knowledge Self-efficacy, and Sense of Community).

**Contributions**

As the success of an electronic community depends on individual’s continuance behavior, this study tries to understand the sustainability of the Electronic Network-of-Practice by examining the factors affecting individuals’ continuance knowledge sharing behavior in terms of external events and individual motivations, in the context of Wikipedia. A research model is developed by integrating social cognitive theory and cognitive evaluation theory to test the hypotheses.

For theoretical contribution, this study extends the existing research on user initial behavior and aims to add value to the continuance literature on knowledge management. In particular, it develops as one of the first research models by integrating SCT and CET and explores new perceptions in explaining continuance knowledge sharing behavior in Wikipedia from both environmental and personal aspects.

For practical contribution, as Oestreicher-Singer & Zalmanson (2013) recently proposed in the context of User Generated Content (UGC) in digital industry that providing an array of value-creating features based on social computing can encourage user participation and contribution which would lead to successful value capture and profits. Since user creating content is a critical success factor in terms of community success, it is hoped that the research findings from the factors proposed in this study will provide community designers a better understanding of facilitating mechanisms which motivates user’s long term participation in this voluntary setting as well as for the sustainability of the ENoP in business setting as contrary.

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REFERENCES


What Drives Continued Sharing Knowledge in the ENoP?


What Drives Continued Sharing Knowledge in the ENoP?


## Appendix

### Table 1. Summary of IS Continuance Research

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<thead>
<tr>
<th>Source</th>
<th>Theories/Models applied</th>
<th>Research Methodology</th>
<th>Context</th>
<th>Key findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bhattacherjee (2001), Limayem et al. (2003)</td>
<td>Expectation Confirmation Theory (ECT), IS Continuance Model</td>
<td>Empirical/ Cross-sectional field survey, Longitudinal setting</td>
<td>Online Banking System, IS adoption &amp; post adoption</td>
<td>Perceived usefulness and satisfaction have significant effects on continuance intention</td>
</tr>
<tr>
<td>Hsu et al. (2004)</td>
<td>Social Cognitive Theory (SCT), Expectation Confirmation Theory (ECT)</td>
<td>Empirical/ Web Survey</td>
<td>WWW application</td>
<td>Perceived confirmation and satisfaction are found to be key determinants of user's continuance intention</td>
</tr>
<tr>
<td>Thong et al. (2006)</td>
<td>Expectation Confirmation Model (ECM)</td>
<td>Empirical/ Mobile Internet Service Survey</td>
<td>Mobile Internet Service</td>
<td>Perceived usefulness, perceived ease of use, satisfaction and perceived enjoyment have positive effects on continuance intention,</td>
</tr>
<tr>
<td>Teo et al. (2003)</td>
<td>Extended TAM</td>
<td>Empirical/ Experiment</td>
<td>Virtual Learning Community</td>
<td>Significant effect of information accessibility and community adaptability features on sustainability of VLC</td>
</tr>
<tr>
<td>Roca et al. (2006)</td>
<td>Decomposed TAM</td>
<td>Empirical/ Web-based survey</td>
<td>E-learning System</td>
<td>Perceived usefulness &amp; information quality are critical to the success of e-learning service</td>
</tr>
<tr>
<td>Sun et al. (2008)</td>
<td>Integrated model of TAM &amp; ECT</td>
<td>Empirical/ Interviews questionnaires</td>
<td>E-Learning</td>
<td>Among 6 dimensions, e-learning course quality is the most important concern for learners whereas anxiety hampers their perceived satisfaction</td>
</tr>
<tr>
<td>Lee (2010)</td>
<td>Expectation–Confirmation Model (ECM), Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB)</td>
<td>Empirical/ Questionnaire Survey</td>
<td>E-Learning Community</td>
<td>Satisfaction has the most significant effect on users' continuance intention</td>
</tr>
<tr>
<td>Ortiz de Ginea &amp; Markus (2009)</td>
<td>Alternative theoretical perspectives (other than TPB or TRA)</td>
<td>Secondary sources (reference literature)</td>
<td>IT Usage, IS continuance, Post-adoption behavior</td>
<td>Automatic behavior (habitual) and emotional response are potential non-rational inputs to cautious intention formation</td>
</tr>
<tr>
<td>Mettler, T. (2012)</td>
<td>Integrated automatic behavior (habitual) &amp; unintentional behavior (emotional) model</td>
<td>Longitudinal field study (survey/interviews)</td>
<td>Electronic Medical Records (EMR) implementation</td>
<td>Both habitual behavior and emotional responses affect continuance behavior</td>
</tr>
</tbody>
</table>
### Table 2. Prior KM Research Comparison

<table>
<thead>
<tr>
<th>Determinants of Knowledge Sharing Behavior</th>
<th>Determinants of Continuance Knowledge Sharing Behavior</th>
</tr>
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<tbody>
<tr>
<td>Incentive systems (Bock &amp; Kim, 2002); Organization climate &amp; management championship (Bock et al., 2005); Extrinsic &amp; intrinsic motivation (Wasko &amp; Faraj, 2005); Cost &amp; benefits (Kankanhalli et al., 2005); Social capital (Chiu et al., 2006); Identification-based trust (Hsu et al., 2007); Community loyalty (Lin et al., 2009); &amp; Sharing culture (Yu et al., 2010)</td>
<td>Reputation &amp; system mediated relationship (Tiwana &amp; Bush, 2005); Satisfaction predicted by knowledge quality &amp; system quality (Chen, 2007); Knowledge self-efficacy &amp; satisfaction (Cheung &amp; Lee, 2007); Habit (Limayem et al., 2007); &amp; Playfulness (Chiu et al., 2011)</td>
</tr>
</tbody>
</table>

### Table 3. Summary of Prior Research on Knowledge Sharing Behavior

<table>
<thead>
<tr>
<th>Source</th>
<th>Theories/Methodology applied</th>
<th>Research focus / Context</th>
<th>Key findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bock &amp; Kim (2002)</td>
<td>Theory of Reason Action, Social Exchange Theory, Social Cognitive Theory / (Survey)</td>
<td>Understanding the factors affecting the individual’s behavior in the public organizations</td>
<td>Expected association and expected contribution are found to have significant effects on attitude towards knowledge sharing</td>
</tr>
<tr>
<td>Bock, Zmud, Kim (2005)</td>
<td>Theory of Reason Action / (Field Survey)</td>
<td>Developing an integrative understanding of the factors supporting or inhibiting individuals’ knowledge-sharing intentions in Korean Organizations</td>
<td>Subjective norms as well as organizational climate exert positive effect and anticipated extrinsic rewards exert negative effect on individual’s knowledge sharing attitudes</td>
</tr>
<tr>
<td>Wasko &amp; Faraj (2005)</td>
<td>Social Capital Theory, Theory of Collective Action / (Survey)</td>
<td>Investigating how individual motivations and social capital influence knowledge contribution in electronic networks</td>
<td>Professional reputation and network centrality have significant influences on individual knowledge contribution</td>
</tr>
<tr>
<td>Kankanhalli, Tan, Wei (2005)</td>
<td>Social Capital Theory, Social Exchange Theory / (Survey)</td>
<td>Formulating and testing theoretical model to identify cost and benefit factors affecting EKR usage</td>
<td>Knowledge self-efficacy and enjoyment in helping others significantly impact EKR knowledge usage</td>
</tr>
<tr>
<td>Chiu, Hsu &amp; Wang (2006)</td>
<td>Social Capital Theory, Social Cognitive Theory / (Web Survey)</td>
<td>Integrating two social theories to construct a model for investigating the motivations behind people’s knowledge sharing in virtual communities</td>
<td>Social capital (trust, ties, norms, etc.) and community based outcome expectations have positive effect on individual’s quantity of knowledge sharing</td>
</tr>
</tbody>
</table>
Hsu et al. (2007)  
Social Cognitive Theory / (Web-based Survey)  
Examining personal and environmental factors support or hinder one’s knowledge behavior in virtual communities  
Self-efficacy, personal outcome expectations and identification based trust have significant influences on knowledge sharing behavior

Lin et al. (2009)  
Social Cognitive Theory / (Online Survey)  
Investigating the relationships between contextual factors, personal perceptions of knowledge sharing, knowledge sharing behavior, and community loyalty in professional virtual communities  
Trust significantly influences knowledge sharing self-efficacy, perceived relative advantage and perceived compatibility which in turn positively affect knowledge sharing behavior

Yu et al. (2010)  
Cultural Lens / (Online & Interview Surveys)  
Exploring the factors that facilitate voluntary knowledge sharing on weblogs  
Enjoying helping, sharing culture and usefulness/relevancy are strongly linked to member knowledge sharing behavior

Table 4. Summary of Prior Research on Continuance Knowledge Sharing in Virtual Communities

<table>
<thead>
<tr>
<th>Source</th>
<th>Theories/Methodologies Applied</th>
<th>Context</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tiwana &amp; Bush</td>
<td>Sunk Cost Theory, Irretrievable Investment / (4 year longitudinal survey)</td>
<td>Expertise Sharing Network</td>
<td>Reputation and system mediated relationship with other users of the system increase continuance sharing</td>
</tr>
<tr>
<td>Chen (2007)</td>
<td>Expectation Confirmation Theory / (Survey)</td>
<td>Virtual Community</td>
<td>Social interaction ties and satisfaction are strong predictors of continuance intention</td>
</tr>
<tr>
<td>Cheung &amp; Lee</td>
<td>Expectation Confirmation Theory, Social Cognitive Theory / (Survey)</td>
<td>Professional Virtual Community (PVC)</td>
<td>Knowledge self-efficacy and satisfaction play important roles in explaining member’s continuance intention to share knowledge</td>
</tr>
<tr>
<td>Limayem et al.</td>
<td>Integrating Habit and IS Continuance Model / (Longitudinal Field Survey)</td>
<td>University Undergraduate Student WWW Use</td>
<td>Habit acts as a moderating variable of the relationship between intentions and IS continuance behavior</td>
</tr>
<tr>
<td>Chiu et al.</td>
<td>Expectation (Dis)confirmation Theory, Justice Theory / (Web Survey)</td>
<td>Professional Virtual Community (Programmer Club)</td>
<td>playfulness is critical for the community members’ satisfaction and continuance intention</td>
</tr>
</tbody>
</table>
### Table 5. Operationalisation of Constructs

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item Wording</th>
<th>Source</th>
</tr>
</thead>
</table>
| Reputation              | 1. I earn respect from others by contributing my knowledge.  
2. I feel that contributing my knowledge improves my status in the Wikipedia community.  
| Feedback                | 1. I get feedback (comment or vote) about my article creation from other members of Wikipedia  
2. I get feedback (advice or criticism) about my contributions (e.g. editing) from the original author of the article  
3. I receive 'barnstar awards' in return for my knowledge sharing from my peers as a show of appreciation  
4. I expect 'Featured Article' award from Wikipedia nominated by other users if I contribute an outstanding article | Self-developed                                                                       |
| Reward                  | 1. I will receive 'barnstar awards' in return for my knowledge sharing from my peers as a show of appreciation  
2. I expect 'Featured Article' award from Wikipedia nominated by other users if I contribute an outstanding article                                                                                                                                                     | Adapted and modified from Bock et al. (2005)                                          |
| Communication           | 1. I maintain close social relationships with some members in Wikipedia.  
2. I spend a lot of time interacting with some members in Wikipedia.  
3. I have frequent communication with some members in Wikipedia.                                                                                                                                                    | Adapted from Tsai & Ghoshal (1998)                                                    |
| Knowledge Self-efficacy | 1. I have confidence in my ability to provide knowledge that others in Wikipedia consider valuable.  
2. I have the expertise needed to provide valuable knowledge for Wikipedia.  
3. I am confident that most information which I provide can attract others’ attention in Wikipedia                                                                                                                                          | Modified from Kankanhalli et al. (2005)                                          |
| Sense of Community      | 1. I feel a strong sense of being part of this electronic network of practice (Wikipedia).  
2. I enjoy myself as a member of this electronic network of practice (Wikipedia).  
3. Overall, there is a high level of morale in this electronic network of practice (Wikipedia).                                                                                                                                               | Adapted from McMillan & Chavis (1986)                                           |
| Continuance intention to share knowledge | 1. I plan to make future contributions of my knowledge to Wikipedia.  
2. I intend to continue sharing my knowledge in Wikipedia in order to acquire new knowledge.  
3. My intentions are much greater to sharing knowledge in Wikipedia than in any alternative means  
4. If I could, I would discontinue sharing my knowledge in Wikipedia.                                                                                                                                                              | Adapted and extended from Bhattacherjee (2001)                                      |
<table>
<thead>
<tr>
<th>Construct</th>
<th>Operational Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reputation</td>
<td>“Online user’s recognition as a valuable member by the peer group of users in an electronic network of practice” (Tiwana &amp; Bush, 2005)</td>
</tr>
<tr>
<td>Feedback</td>
<td>“The extent to which one receives <em>an advice, criticism, or information about his/her task performance</em> in an electronic network of practice” (Barr &amp; Conlon, 1994)</td>
</tr>
<tr>
<td>Rewards (Social)</td>
<td>“Something that causes a behavior to increase in intensity such as status, image, respect, and glory for the contribution in an electronic network of practice”. (Hoisl et al., 2007)</td>
</tr>
<tr>
<td>Communication</td>
<td>“Social interaction among members in an electronic network of practice” (the degree of intensity of user’s connection with each other) (Tsai &amp; Ghoshal, 1998)</td>
</tr>
<tr>
<td>Knowledge Self-efficacy</td>
<td>“The confidence in one’s ability to provide knowledge that is valuable to an electronic network of practice” (Kankanhalli et al., 2005)</td>
</tr>
<tr>
<td>Sense of Community</td>
<td>“The degree to which a member feels a sense of belonging in an electronic network of practice” (Yoo et al. 2002).</td>
</tr>
<tr>
<td>Continuance intention to share knowledge</td>
<td>“The likelihood that a user will continue sharing knowledge in an electronic network of practice” (Bagozzi &amp; Dholakia, 2002)</td>
</tr>
</tbody>
</table>
Survey Questionnaire

Australian School of Business
School of Information Systems, Technology and Management

What Drives Continued Sharing Knowledge in the ENoP?

Abstract
The School of Information Systems, Technology and Management, Australian School of Business is researching a behavioral study on electronic community. The main purpose of the study is to examine the factors influencing individual’s motivation to continue sharing knowledge in Wikipedia.

- An intriguing question: Do individuals’ motivations affected by underlying environmental factors adequately explain their continuance intention to share knowledge in Wikipedia?

Online Survey
This online survey explores the responses from users of English Wikipedia community. The duration of the survey is two month (Jan 1 to Feb 28, 2014). A change to the schedule can be made according to the response rate. The survey is set to take 10 minutes of your time and it contains 20 multiple-choice questions.

This is a VOLUNTARY participation. The survey data will be kept CONFIDENTIAL; and the report will be interpreted as ANONYMOUS. Thank you for your attention and participation!

Information for Respondents
We welcome members of the Wikipedia community to participate in the survey who have an account on English Wikipedia; the data from your response would contribute to the study.

We would like to appreciate your time and effort taken in the survey with $10 for your participation.

The criteria for reward eligibility are as follows:
1. The invitation is sent to your user-talk page in Wikipedia to participate in the survey by the study coordinator (Wikipedia username: WikiKhet)
2. All questions have to be answered as a complete survey.
3. Attention to answer the questions carefully, random or apparently same choice answers are not considered.

It is to reward the first 150 eligible respondents only. A 10 dollar check will be sent to the selected respondents to their provided mailing addresses after processing the answer scripts in 7 working days when the survey is finished. Please provide us a valid email address for subsequent follow-up.

Should you have any queries, please write us email at z3438861@student.unsw.edu.au to the study coordinator JuneOoTha.
Please read carefully for each statement. People have different perceptions in contributing their knowledge to Wikipedia. Based on your own experience, please choose the appropriate scales for your opinion to the following statements.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
<th>Slightly Disagree</th>
<th>Neutral</th>
<th>Slightly Agree</th>
<th>Moderately Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

1. I earn respect from others by contributing my knowledge to the Wikipedia community.
   - Strongly Disagree
   - Strongly Agree

2. I feel that contributing my knowledge improves my status in the Wikipedia community.
   - Strongly Disagree
   - Strongly Agree

3. I contribute my knowledge to gain reputation in the Wikipedia community.
   - Strongly Disagree
   - Strongly Agree

4. I get feedback (comment or vote) about my article creation from other members of Wikipedia.
   - Strongly Disagree
   - Strongly Agree

5. I get feedback (advice or criticism) about my contributions (e.g. editing) from the original author of the article.
   - Strongly Disagree
   - Strongly Agree

6. I will receive ‘barnstar awards’ in return for my knowledge sharing from my peers as a show of appreciation.
   - Strongly Disagree
   - Strongly Agree

7. I expect ‘Featured Article’ award from Wikipedia nominated by other users if I contribute an outstanding article.
   - Strongly Disagree
   - Strongly Agree

8. I maintain close social relationships with some members in Wikipedia.
   - Strongly Disagree
   - Strongly Agree
9. I spend a lot of time interacting with some members in Wikipedia.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

10. I have frequent communication with some members in Wikipedia.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

11. I have confidence in my ability to provide knowledge that others in Wikipedia consider valuable.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

12. I have the expertise needed to provide valuable knowledge for Wikipedia.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

13. I am confident that most information which I provide can attract others' attention in Wikipedia.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

14. I feel a strong sense of being part of this electronic network of practice (Wikipedia).

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

15. I enjoy myself as a member of this electronic network of practice (Wikipedia).

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

16. Overall, there is a high level of morale in this electronic network of practice (Wikipedia).

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

17. I plan to make future contributions of my knowledge to Wikipedia.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

18. I intend to continue sharing my knowledge in Wikipedia in order to acquire new knowledge.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>
19. My intentions are much greater in sharing knowledge in Wikipedia than in any alternative means.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

20. If I could, I would discontinue sharing my knowledge in Wikipedia.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

**Personal Information**

1) Gender
   - Male
   - Female

2) Age
   - -- AGE--

3) Employment Status
   - -- EMPLOYMENT--

4) Place of Residence
   - -- REGION--

5) Email
   - -- EMAIL--

6) Qualification
   - -- QUALIFICATION--

7) Special Interest
   - -- INTEREST--

8) Membership duration
   - --Month/Year--

9) Contribution (On average, how do you spend time on your knowledge contribution in Wikipedia? )
   - --Hours per week--

10) Frequency (Indicate how many times of your knowledge contribution in Wikipedia?)

   - Less than once a month
   - Once a month
   - Once a week
   - Several times a week
   - Once a day
   - Several times a day
   - Not at all

   [Submit]