Explaining the Continuous Use of Social Virtual Worlds: An Applied Theory of Planned Behavior Approach

Jani Merikivi
Turku Centre for Computer Science
jani.merikivi@tse.fi

Matti Mäntymäki
Turku School of Economics
Turku Centre for Computer Science
matti.mantymaki@tse.fi

Abstract

Social virtual worlds (SVWs) have become increasingly popular spaces for social interaction. To be attractive to engage with, maintaining a sufficient base of active users is a sine qua non. Using Habbo as an example, this paper develops a framework for investigating the continuous use of social virtual worlds. Based on a detailed review of literature, we propose that a decomposed theory of planned behavior complemented with critical mass and allure of competitors would be an applicable theoretical lens to explain why users continuously engage with a social virtual world. We suggest that the social aspects are of particular importance in determining the continuous use of SVWs. This research attempts to build a theoretical foundation for further studies empirically investigating the phenomenon.

1. Introduction

Besides entertainment, social virtual worlds – a subset of virtual world used in relation to game worlds – have become convenient and prominent spaces for social interaction. Habbo, one of the world's largest social virtual worlds for teens, has now spread to 32 countries around the world and reached almost 10 million monthly unique visitors aged 13–18 [1].

Social virtual worlds (SVWs), many of which provide a platform that is more an extension of reality than just a fantasyland, are persistent computer-mediated communities simulating an environment that use elements of gaming [2, 3]. Contrary to games, there are no specific goals.

Apart from the game immersion, SVWs could be compared to virtual communities; "social aggregations that emerge from the net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace." [4] Each and every individual is important in volitionally participating and meeting with new and old friends within the community and creating, sharing, reflecting, and consuming the interesting content influenced by norms, values, and offline life [e.g. 5–8].

In a business that relies on access fees, commercials and premium services, the social outcomes, extended play and loyalty that result from members engaged with an SVW is translated directly into monetary value [cf. 6, 9]. For example, Habbo, one of the world's largest social virtual worlds, collects no access fee but offers virtual furniture for decorating user-generated virtual rooms, tickets to play in-world games, and voluntary memberships allowing members to additional benefits not available to non-subscribers. All these can be bought with Habbo credits, the SVW's virtual currency purchased with real-life money.

Investigating technology acceptance and adoption has evolved into one of the most prominent research streams within the information systems (IS) discipline [10, 11]. However, recent IS literature has shown increasing interest to post-adoption behavior [cf. e.g., 10, 12, 13] and IS continuance [14, 15].

Technology access is suggested as one of the major issues in IS proposals [16]. However, focusing only technology access and adoption omits the continued intention to use such technologies [e.g. 12, 17, 18, 19].

We argue that objectives such as competitive advantage from virtual social worlds occur only through continued use – not just adoption or acceptance. Currently, prior literature provides a limited theoretical understanding of sustaining continued use among those using social virtual worlds.

As a result, the purpose of this paper is to develop a framework to answer the following high-level research question: *why do users continuously engage with social virtual worlds?*

This paper has two primary goals; firstly, by reviewing prior literature, to identify a set of factors that may affect continuous use of social virtual worlds, and secondly, by using the identified factors to develop a research model that could be used in empirical investigation.

In this paper, we investigate one social world virtual, Habbo, since the first subsequent empirical research is planned to be conducted among the members of Habbo. Moreover, since our focus in particularly on the post-adoption behavior and empirical research will be conducted among active users of Habbo, we do not discuss initial acceptance or adoption.

Regarding the contribution of this paper, understanding the process toward the continued use of social virtual worlds may be beneficial in designing new features and services for SVWs. Particularly since this issue has not been widely covered by prior research, the attempt made in this paper to address this gap in the literature may be valuable. For public policy makers, understanding what factors affect continued use behavior among users is viable with regard to successfully planning and implementing initiatives involving considerable resources, such as those striving to provide youth services in virtual social worlds and communities. As stated by Hsieh, Rai & Kiel [20], a policy that focuses only on reducing or eliminating barriers to technology access is only part of the solution.

From a more theoretical perspective, our paper aims to make a contribution by identifying the factors behind the continued use of social virtual worlds and thus laying a foundation for further studies. Secondly, we develop a research model that could be utilized in investigating other online services on which the social aspect is expected to have a strong influence. Thirdly, by particularly focusing on existing active users it increases the understanding of post-adoption user behavior, an emergent topic in the contemporary information system and e-business research. [cf. e.g., 14, 15, 18.]

2. Background

Prior studies, in attempting to understand sustained attraction of virtual communities have focused on the unique characteristics such as social atmosphere with various methods [e.g., 5, 21]. To complement these existing conceptual approaches and to focus more explicitly on understanding the role of attitudes, social influence, and behavioral control on continued use, we pay attention to the frameworks originated in social psychology, such as the technology acceptance model (TAM) [22, 23], the theory of reasoned action (TRA) [24, 25, 26], and the theory of planned behavior (TPB) [27, 28]. These frameworks have been widely applied when studying information and communication technology acceptance, including post-adoption behavior by individuals who already have experience with the technology [i.e., 19, 29, 30, 31].

In this paper, we apply the theory of planned behavior (TPB) as the theoretical foundation of our model. TPB has shown to conform to technology acceptance among individuals with IT usage experience in homes [31, 32]. Moreover, we include additional components from perceived critical mass [33] to build a framework for scrutinizing the individual's intention to continued use of social virtual worlds.

As argued by Benbasat and Zmud [34], the usage context of the IT artifact is an important factor in explaining user behavior. Consequently, we have chosen TPB as the foundation of our research model since it suits the usage context well. First of all, the use of social virtual worlds is of a hedonic and voluntary nature. Yet, users may view their use of social virtual worlds as also including utilitarian motives; the usage context is, at any rate, leisure-oriented rather than work-oriented.

Secondly, we assume that the social aspects of usage are of particular importance. Compared to, e.g., TAM, TPB takes the social influence affecting SVW usage better into account, by investigating the subjective norm – the degree to which an individual believes that people who are important should perform the behavior in question [26, 28]. Moreover, in original TAM, as the intention to use is determined by two factors – perceived usefulness and perceived ease of use – TPB enables the making of a distinction between hedonic and utilitarian motives. As argued by Benbasat and Barki [34], in TAM, perceived usefulness and perceived ease of use are often viewed as 'black boxes'. Thus, TPB can perhaps provide a more fine-grained illustration of the determinants of the attitude.

Complementing perceived usefulness and ease of use with perceived enjoyment has proven viable in a hedonic setting.. Therefore, in order to take the hedonic and social aspects into account, the original TAM would have needed considerable modifications. Moreover, since our framework explores components from several theories, using TPB as the core of the model instead of TAM, we hope to build our model on a more stable ground.

Agreeing with Shimp and Kavas [36] that cognitive constructs of belief could not be combined to single conceptual factor, we follow Taylor and Todd [37, 38], Venkatesh and Brown [32], and Hsieh et al. [20] who deconstructed the underlying TPB belief constructs. We argue that a decomposed TPB, adapted from TPB, offers comprehensive information on belief determinants of SVW's continuous intention. Based on a detailed literature review, we decomposed the three TPB belief constructs – attitude (ATT), subjective norm (SN), and perceived behavior control (PBC) – to provide a satisfactory explanation in the formulation of our model.

In our research model, the TPB framework is complemented with two determinants of attitude, social outcomes and trust. Moreover, we have also included components from innovation diffusion theory and perceived critical mass [33]. The research model is discussed in detail in the following chapter.

3. The research model

3.1. The Attitudinal Belief Structure

According to TPB, behavioral intention (BI) is determined by three factors, attitude (ATT), perceived behavioral control (PBC) and subjective norm (SN) [24, 25, 26, 27, 28]. Earlier research on TPB has concentrated mainly on technology adoption among first-time users. With this paper, we attempt to extend the theory to reflect also the continued use of technology that has similarities with earlier TPB research. [cf. e.g. 20.] Thus, we postulate the three first hypotheses accordingly:

H1: Attitude towards continuous use of the SVW positively affects the continuance intention.

H2: PBC positively affects the continuance intention.

H3: SN positively affects the continuance intention.

Individuals use information technology from both extrinsic and intrinsic motivation perspectives [39, 40]. Extrinsic motivation pertains to achievement of a specific goal, whereas intrinsic motivation is the pleasure, joy, playfulness, and satisfaction derived from a specific behavior [40, 41, 42, 43]. Teo, Lim, and Lai [44] empirically verified that intrinsic motivation has a significant effect on computer and internet usage. The distinction between extrinsic and intrinsic motivation has been articulated also in consumer behavior [45, 46] and IS literature on technology acceptance [20, 32, 39, 47].

Drawing on this body of research, we assume that the continuous use of SVWs is influenced by both extrinsic and intrinsic motivation, i.e. utilitarian and hedonic outcomes. Juxtaposed with workplace IT, we assume that the adoption of SVWs is not driven by a strong productivity orientation [32], but other utilitarian motives such as the opportunity to effectively communicate, share member-generated information and knowledge [5, 23, 32] and social interaction [8]. Finally we conclude with the respective hypothesis:

H4: Utilitarian outcomes positively affect the attitude toward continuous use of the SVW.

Perceived enjoyment represents the intrinsic motivation and is defined as hedonic, the extent to which participating in online communities is perceived pleasurable and satisfying. Prior research has shown that the use of IT was influenced by perceived enjoyment, not only to improve performance [39, 48, 49, 50]. In the context of SVWs, Mr. Sulka Haro [51], the lead designer on Habbo, described in his keynote presented at GDC08 conference that members for example, seek a playful job or task inside the world in a form of a reciprocal role play. They may work as bartenders in virtual bars or organize beauty contests with their Habbo friends in self-decorated virtual rooms. Using Habbo credits for decorating rooms or dressing avatars is not only for enjoyment itself, but closely intertwined to such role-playing activities. As a result, we assume that the hedonic outcomes, particularly the enjoyment, are important in determining the continuous use of SVWs. Thus, we hypothesize that:

H5: Hedonic outcomes positively affect the attitude toward continuous use of the SVW.

Prior IT and innovation research suggests that social status, extrinsic of nature, is conferred on individuals as a result of adopting a technological innovation [e.g., 32, 52, 53, 54]. In SVWs, the content members create and share through participation influence their status. For example, in a three-dimensional Habbo teenagers can, via customizable animated avatars, decorate their private rooms and take part in activities, events, games and competitions created by the designers or the users themselves.

However, there is a growing understanding of intrinsic social outcomes such as support, affiliation, and connectedness in bringing together individuals online and offline [e.g., 4, 5, 6, 8, 55]. They spend considerable time maintaining existing friendships and making new ones in a search for proximal and distal companionship, support, and affiliation, reflecting their need for belonging [cf. 8, 56, 57]. Such social connectedness represents subjective awareness of interpersonal closeness [57, 58], and a personal sense of identity and place [59, 60]. The information-related [61] facets of cognitive and relational dimension are excluded, as they would otherwise overlap the extrinsic beliefs.

In the context of SVW engagement, social needs are derived from extrinsic and intrinsic into social outcomes category that includes the belief constructs of status and connectedness. We will presume that strong perceived status and connectedness will positively affect the engagement with an SVW. As a result, we hypothesize that:

H6: Social outcomes positively affect the attitude toward continuous use of the SVW.

Trust is a central element of all human interaction [62, 63]. Trust is a key ingredient of social capital which in turn has been identified to play a role also with online communities [62, 64, 65, 66].

Trust has been identified to be an important factor not only in e-commerce acceptance [67, 68], but also in ongoing exchange relationships [69, 70]. SVW is not only an online service or Internet merchant, but also a social system. Therefore, in addition to trust in the service provider, in terms of social capital, trust other users of the SVW is important.

Based on these arguments, we have included trust as an antecedent of attitude in the research model. In this research, we investigate trust only as a set of trusting beliefs [cf. e.g., 71, 72] in Habbo as well as in its other users. In this paper, we have excluded the dispositional and institutional dimensions of trust. Moreover, we do not investigate the behavioral intention related to trust, but position trust as a determinant of attitude and accepted the definition of trust by Maier et al. [73]. Therefore, the respective hypothesis is formulated as follows:

H7: Trust positively affects the attitude toward continuous use of the SVW.

3.3. The Behavioral Control Belief Structure

Perceived behavioral control (PBC) can be conceptualized as the ease or difficulty in conducting certain behavior [28]. Self-efficacy has been viewed as the main factor of PBC [74, 75]. Compeau and Higgins [61] define computer self-efficacy as "an individual's perception of his or her ability to use a computer in the accomplishment of a job task". We adopt this definition to be applied also in SVW context. However, instead of accomplishing a job task, in our research self-efficacy refers to his/her confidence in using the SVW. Thus, the respective hypothesis is postulated as follows:

H8: SVW self-efficacy positively affects PBC.

As stated by van der Heijden [47], perceived ease of use (PEOU) plays a pivotal role in the user acceptance of hedonic information systems. In this research, we investigate PEOU as an antecedent of perceived behavioral control. [20.] As a result, we hypothesize that:

H9: Perceived ease of use positively affects PBC.

Taylor & Todd [38] and Hsieh et al. [20] identified that availability of the technology needed to use the service has a positive influence on PBC. [20.] Thus, the tenth hypothesis is postulated as follows:

H10: Availability positively affects PBC.

3.4. The Normative Belief Structure

SVW usage can be derived from individual's voluntariness, which suggests that users perceive the adoption decision to be non-mandatory. However, as supported by extensive prior research [e.g., 20, 32, 76], social norms positively influence an individual's IT usage.

Social influence is the extent to which members of a social network influence one another's behavior [77]. In contrast to social outcomes, social influence is the perceived pressure to perform the behavior in question. The importance of social influence as a determinant of behavior has been highlighted in prior research [e.g., 20, 26, 27, 28, 32, 37, 78]. Thus, we can expect IT adoption decisions to be influenced by the views of relevant others, such as friends and family members [e.g. 20; 79, 80]. For many, the community itself acts as an important reference group for its members – even replacing other influential reference groups [e.g. 5, 81]. Members feel that they are connected to other members [8].

Therefore, we hypothesize as follows:

H11: Referents' influence positively affects subjective norm.

Prior research has identified secondary sources of information – such as TV and newspapers – as influential in early adopters' decisions to adopt [32, 53]. In the context of continuous use, we expect that those already using SVWs may as well be influenced by the secondary information sources, i.e. mass media, because information about alternative SVWs is not yet available among those individuals. As a result, the twelfth hypothesis is postulated as follows:

H12: Secondary sources of information negatively affect subjective norm.

Construct	Conceptualization	Source
Attitude	The degree to which the behavior of interest is valued	[28]
Utilitarian outcomes	The degree to which using SVW enhances the effectiveness of the personal related activity, such as information sharing.	[5, 23, 32]
Hedonic outcomes	The degree to which the enjoyment is derived from SVW usage	[32, 39, 49]
Social outcomes	The degree to which the status of an individual is conferred on using SVW	[32, 57, 58]
Trust	Willingness to be vulnerable to the actions of another party; set of trusting beliefs.	[67, 68, 73]
Subjective norm	The perceived social pressure to engage with SVW	[28]
Referents' influence	The degree to which other individuals influence on using SVW	[12, 20, 32, 38]
Secondary information	The degree to which mass media (TV, Radio etc.) influence the use of SVW	[32]
Perceived behavioral control	The perception of the ability to use SVW	[28]
Self-efficacy	The degree to which an individual is capable of using SVW	[61, 74, 75]
Perceived ease of use (PEOU)	The degree to which an individual perceives using SVW is free of effort	[22, 23, 47]
Availability	The availability of technology to use SVW	[20, 38]
Perceived quality of compe-titors	The degree to which other alternatives influence the use of SVW	[53, 90]
Perceived critical mass	The perceived minimum amount of users needed to use SVW	[20, 33, 53, 83]
Continuan-ce intention	The intention to participate and continue using SVW	[20]

Table 1. Summary of the constructs

3.5. Perceived critical mass and competitors

TPB has limitations in regarding the realization of decisions; one-dimensional belief structures have turned out to be problematic [e.g. 5, 38]. To overcome such challenges, prior studies of IT adoption [23, 37, 38, 52, 82] have attempted to identify the beneficial factors of attitudinal beliefs by applying the Rogers' [53] theory on diffusion of innovations (DOI). However, DOI has been noted to remain silent on how attitudes are formed [12], and, in the context of interactive innovations, continuous use is not ambiguously related solely to attitudinal beliefs, but is influenced by other factors such as the critical mass as well [see 53, 83].

As the content in these dynamic services is produced by the users, referring to Metcalfe's law [cf. e.g. 84], the number of users in very general terms increases the value that SVW is able to deliver to its users. For example, the SVW may lose its relative advantage over competitors if a certain number of other members with whom an individual particularly wants to interact stop using it [see 85, 86, 87]. Consequently, members are not perceived as equal: a small group of close members congregated at the SVW may have a stronger influence than an equally sized group of distant members [53]. Without losing such cohesion between the critical members, SVWs are perceived as reaching and adhering to them with scalability tools, such as search engines and directories – if not complex themselves [6, 88, 89]. Consequently, the key challenge the maintainers of these services are facing is to transfer from attracting new users towards retaining the important existing ones.

Similarly to Hsieh et al. [20] and [33], perceived critical mass is operationalized in our research as the degree to which a person believes that most of his or her peers are using the particular innovation [33]. In comparison to the subjective norm, PNE captures the aggregate personal network exposure [20]. Hence, a member is likely to discontinue using the SVW if such relative advantage over alternatives cannot be perceived and results in a replacement. This indicates the fact that decisions on continuance made voluntarily are not done in a vacuum but are influenced by the existence of alternate SVWs [cf. e.g. 90] and perceived critical mass [33].

Thus, we propose that perceived quality of competitors and losing the perceived critical mass negatively affects the intention of continued use by causing cognitive uncertainty and difficulty in determining which SVW to use. Consequently, the last two hypotheses to complement the TPB framework are postulated as follows:

H13: Critical mass positively affects the continuance intention.
H14: Perceived quality of competitors negatively affects the continuance intention.

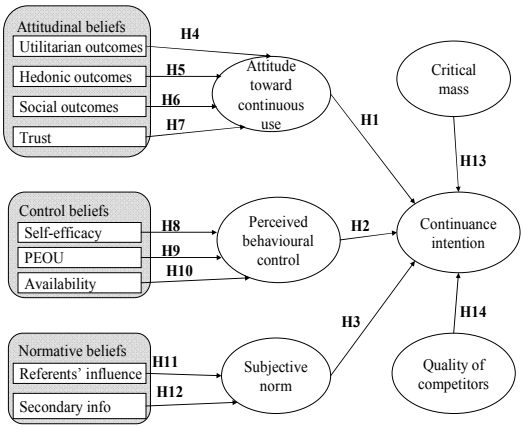

Figure 1. The research model

4. Discussion and further research

4.1. Implications

This paper contributes to the literature on social virtual worlds and the research stream within the IS literature focusing on continuous use of information systems associated with home and leisure activities [47]. Based on a detailed literature review, the paper develops and introduces a research model designed for investigating the continuous use of SVWs. Firstly, we discuss the nature and use context of SVWs and possible theoretical frameworks. As a result, we propose a framework from decomposed TPB, complemented with components from critical mass, that is well suited to capture the voluntary, hedonic and social nature of SVWs.

Since the use of SVWs has not been extensively investigated in the prior IS literature, our paper explores a relatively new area of research. In this regard, developing the model and identifying the relevant constructs can be considered the main theoretical contribution of our research.

In particular, in our research model we highlight the social aspect associated with the use of SVWs, by investigating it through two lenses: subjective norm and critical mass. Moreover, our research focuses especially on the young, who have had been given only minimal attention in prior IS research in real-life setting, unlike elderly consumers [cf. 91], The focus on youth comes from the fact that they form the majority of SVW users. In the case of Habbo, the users are teenagers and the actual users are surveyed.

From a managerial perspective, our paper is one of the first attempts to identify the predictors of continuous use of SVWs. Understanding the factors that influence users' engagement with the SVW can help the maintainers to develop attractive features and services to keep users loyal.

4.2. Limitations & further research

Self-evidently, this research suffers from several limitations. Since this paper was solely of conceptual nature aiming to develop a research model, it provides no empirical evidence to support or reject the model. Since the SVW framework in this research is primarily aimed at the young, the results cannot be generalized to the whole population.

Moreover, the young diversified members are expected to engage SVWs at different times and for various reasons. As identified by Citrin, Spritt, Silverman & Stem [92] and Goldsmith and Hofacker [93, 94], the individual's innovativeness is a domain-specific issue, implying that individuals who are likely to adopt the latest innovation and discontinue using another in one field may be laggards in another [95, 96]. Thus, we suggest that they could be described and classified in terms of innovativeness [53], explaining how the perceived attributes of SVW have an effect on its rate of continued use. However, we did not include this aspect in our research model, as we believe that distributing users based on their innovativeness could potentially provide insightful results, not forgetting that the users of successful SVWs are for the most part relatively young. Consequently, drawing generalizations to the whole population is not of the highest relevance. Due to limited space, only the TPB-based core of the model was presented in this paper.

Since SVWs and the field of social media is not a monolithic, we suggest including additional variables in the research model and testing it in various contexts such as online communities and massively multi-player online role-playing games (MMORPGs) in order to further improve its explanatory power.

The research process will continue from by empirically testing the research model. The empirical research will be conducted by distributing an online questionnaire for the users of Habbo in 5-7 countries from different continents. Thereafter, the aim is to further test the applicability of the model will be further tested among users of an online community targeted for users 16 to 40 years of age, the average being approximately age 20.

5. Conclusions

This paper has identified and articulated the reasons for continuous engagement with social virtual worlds as well as presenting a research model for this purpose. As the research process will continue by empirically testing the model, the authors would be highly appreciative of any feedback from the academic community that helps to improve the quality of their work.

Reference

[1] Sulake Corporation , “Habbo - Where else”, 2008 (retrieved June 12, 2008, http://www.sulake.com/habbo/?navi=2).

[2] Bartle, R.A. Designing Virtual Worlds, New Riders, Indianapolis, 2003.

[3] B. Book, ”Moving Beyond the Game: Social Virtual Worlds”, In: State of Play 2 Conference, 2004.

[4] Rheingold, H. The Virtual Community: Homesteading on the Electronic Frontier, The MIT Press, Cambridge, MA, 2000.

[5] R.P. Bagozzi and U.M. Dholakia, “Intentional social action in virtual communities”, Journal of Interactive Marketing, 16(2), 2002, pp. 2–21.

[6] Hagel J. and A.G. Armstrong, Net gain: expanding markets through virtual communities. Harvard Business School Press, Boston MA,1997.

[7] J. Preece, Online communities: Designing usability, supporting sociability, John Wiley & Sons, New York NY, 2000.

[8] Wellman, B and M. Gulia, Net-surfers don’t ride alone: Virtual communities as communities. In: Communities and Cyberspace, ed. Kollock, P. and M. Smith, Routledge, New York NY, 1999.

[9] S. Humpreys, “Ruling the virtual world. Governance in massively multiplayer online games”, European Journal of Cultural Studies, 11(2), 2008, pp. 149–171.

[10] J. Jasperson, P.E. Carter and R.W. Zmud, "A comprehensive conceptualization of post-adoptive behaviors associated with information technology enabled work systems", MIS Quarterly, 29(3), 2005, pp. 525-557.

[11] V. Venkatesh, M.G. Morris, G.B. Davis and F.D. Davis, "User acceptance of information technology: Toward a unified view", MIS Quarterly, 27(3), MIS Quarterly & The Society for Information Management, 2003, pp. 425-478.

[12] E. Karahanna, D.W. Straub and N.L. Chervany, "Information technology adoption across time: a cross-sectional comparison of pre-adoption and post-adoption beliefs", MIS Quarterly, 23(2), 1999, pp. 183-213.

[13] M. Parthasarathy & A. Bhattacherjee, "Understanding post-adoption behavior in the context of online services", Information Systems Research, 9(4), 1998, pp. 362-379.

[14] M. Limayem, S.G. Hirt and C.M.K. Cheung, "How habit limits the predictive power of intention: The case of information systems continuance", MIS Quarterly, 31(4), 2007, pp. 705-737.

[15] G. Premkumar and A. Bhattacherjee, "Explaining information technology usage: test of competing models", Omega, 36(1), 2008, pp. 64-75.

[16] P. DiMaggio, E. Hargittai, W.R. Neuman, and J.P. Robinson, “Social Implication of the Internet”, Annual Review of Sociology, 27(1), 2001, pp. 307–336.

[17] R. Agarwal and J. Prasad, “The Role of Innovation Characteristics and Perceived Voluntariness in the Acceptance of Information Technology”, Decision Sciences, 28(3), 1997, pp. 557–582.

[18] A. Bhattacherjee, "An empirical analysis of the antecedents of electronic commerce service continuance", Decision Support Systems, 32(2), 2001, pp. 201-214.

[19] B. Szajna, “Empirical evaluation of the revised TAM”, Management Science, 42(1), 1996, pp. 85–92.

[20] J.J.P. Hsieh, A. Rai and M. Keil, "Understanding digital inequality: Comparing continued use behavioral models of the socio-economically advantaged and disadvantaged", MIS Quarterly, 32(1), MIS Quarterly & The Society for Information Management, 2008, pp. 97-126.

[21] Wellman, B., The network community: An introduction to networks in the global village, In: Networks in the global village, ed. Wellman, B., Westview Press, Boulder CO, 1999.

[22] F.D. Davis, R.P. Bagozzi, and P.R. Warshav, “User acceptance of computer technology: A comparison of two theoretical models”, Management Science, 35(8), 1989, pp. 982–1003.

[23] F.D. Davis, “Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Computer of Information Technology”, MIS Quarterly, 13(3), 1989, pp. 319–339.

[24] I. Ajzen and M. Fishbein, “Attitudinal and normative variables as predictors of specific behavior”, Journal of Personality and Social Psychology, 27(1), 1973, pp. 41–57.

[25] Fishbein, M., Attitude and the prediction of behaviour. In: Readings in attitude theory and measurement (pp. 477–492), ed. M. Fishbein, Wiley, New York NY, 1967

[26] Fishbein, M. and I. Ajzen, Belief, Attitude, Intention, and Behavior: An introduction to the Theory and Research, Addison-Wesley, Reading MA, 1975.

[27] Ajzen, I., From intentions to actions: A theory of planned behavior, In: Springer series in social psychology (pp. 11–39), ed. J. Kuhl and J. Beckmann, Springer, Berlin, 1985

[28] I. Ajzen, "The theory of planned behavior", Organizational Behavior and Human Decision Processes, 50(2), 1991, pp. 179–211.

[29] A. Bhattacherjee, "Understanding Information Systems Continuance: An Expectation-Confirmation Model", MIS Quarterly, 25(3), 2001, pp. 251–370.

[30] S-J. Hong, J.Y.L. Thong, and K.Y. Tam, "Understanding continued information technology usage behavior: A comparison of three models in the context of mobile internet", Decision Support Systems, 42(3), 2006, pp. 1819–1834.

[31] S. Taylor and P.A. Todd, "Assessing IT Usage: The Role of Prior Experience", MIS Quarterly, 19(4), 1995, pp. 561–570.

[32] V. Venkatesh and S.A. Brown, "A Longitudinal Investigation of Personal Computers in Homes: Adoption Determinants and Emerging Challenges", MIS Quarterly, 25(1), 2001, pp. 71–102.

[33] H. Lou, W. Lou, and D. Strong, "Perceived Critical Mass Effect on Groupware Acceptance", European Journal of Information Systems, 9(2), 2000, pp. 91–103.

[34] I. Benbasat and R.W. Zmud, "The identity crisis within the IS discipline: Defining and communicating the discipline's core properties", MIS Quarterly, 27(2), 2003, pp. 183-194.

[35] I. Benbasat and H. Barki, "Quo vadis, TAM?", Journal of the Association for Information Systems, 8(4), 2007, pp. 211-218.

[36] T. Shimp and A. Kavas, "The Theoryof Reasoned Action Applied to Coupon Usage", Journal of Consumer Research, 1984, 11(3), pp. 795–809.

[37] P.A. Todd and S. Taylor, "Decomposition and crossover effects in the theory of planned behaviour: A study of consumer adoption intentions", International Journal of Research in Marketing, 12(2), 1995, pp. 137–155.

[38] S. Taylor and P.A. Todd, "Understanding Information Technology Usage: A Test of Competing Models", Information Systems Research, 6(2), 1995, pp. 144–176.

[39] F.D. Davis, R.P. Bagozzi, and P.R. Warshav, "Extrinsic and Intrinsic Motivation to Use Computers in Workplace", Journal of Applied Social Psychology, 22(14), 1992, pp. 1111–1132.

[40] R.J. Vallerand, "Toward a Hierarchical Model of Intrinsic and Extrinsic Motivation", Advances in Experimental Social Psychology , (29), 1997, pp. 271–360.

[41] M. Igbaria, J. Iivari, and H. Maragahh, "Why do individuals use computer technology? A Finnish case study", Information & Management, 25(5), 1995, pp. 227–238.

[42] Deci, E.L., Intrinsic Motivation, Plenum Press, New York NY, 1975.

[43] Deci, E.L. and R.M. Ryan, The empirical Exploration of Intrinsic Motivational Processes, In: Advances in Experimental Social Psychology (pp. 39–80), ed. L. Berkowitz, Academic Press, New York NY, 1980.

[44] T.S.H. Teo, V.K.G. Lim, and R.Y.C. Lai, "Intrinsic and extrinsic motivation in Internet usage", Omega, 27(1), 1999, pp. 25–37.

[45] E.C. Hirschman and M.B. Holbrook, "Hedonic Consumption: Emerging Concepts, Methods and Propositions", Journal of Marketing, 46(1), 1982, pp. 92–101

[46] M.P. Venkatraman and D.J. McInnis, "The Epistemic and Sensory Exploratory Behaviors of Hedonic and Cognitive Consumers", Advances in Consumer Research, 12(1), 1985, pp. 102–107.

[47] H. van der Heijden, "User acceptance of hedonic information systems", MIS Quarterly, 28(4), MIS Quarterly & The Society for Information Management, 2004, pp. 695-704.

[48] V. Venkatesh and C. Speier, "Computer Technology Training in the Workplace: A Longitudinal Investigation of the Effect of Mood", Organization Behavior and Human Decision Processes, 79(1), 1999, 1–28.

[49] M. Igbaria, S.J. Schiffman, and T.J. Wieckowski, "The respective roles of perceived usefulness and perceived fun in the acceptance of microcomputer technology", Behavior and Information Technology, 17(6), 1994, pp. 349–361.

[50] C-L. Hsu and H-P. Lu, "Consumer Behavior in online game communities: A motivational factor perspective", Computers in Human Behavior, 23(3), 2007, pp. 1642–1659.

[51] GDC08, The State of the Hotel – What Makes Teens Tick at HABBO, (retrieved June 13, 2008 http://www.massively.com/2008/02/19/gdc08-sulka-haro-tells-us-how-to-habbo/).

[52] G.C. Moore and I. Benbasat, "Development of an instrument to measure perceptions of adopting an information technology innovation", Information Systems Research, 2(3), 1991, pp. 192–222.

[53] Rogers, E.M., Diffusion of Innovations, Free Press, New York NY, 2003.

[54] V. Venkatesh and F.D. Davis, "A Theoretical Extension of the Technology Acceptance Model: Four

Longitudinal Field Studies", Management Science, 46(2), 2000, pp. 186–204.

[55] C-M. Chiu, M-H. Hsu, and E.T.G. Wang, "Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories", Decision Support Systems, 42(3), 2006, pp. 1872–1888.

[56] R.F. Baumeister and M.R. Leary, "The need to belong: Desire for interpersonal attachments as a fundamental human motivation", Psychological Bulletin, 117, 1995, pp. 497–529.

[57] R.M. Lee and S.B. Robbins, "Measuring Belongingness: The Social Connectedness and Social Assurance Scales", Journal of Counseling Psychology, 42(2), 1995, pp. 232–241.

[58] R.M. Lee and S.B. Robbins, "The relationship between social connectedness, self-esteem, and social identity", Journal of Counseling Psychology, 45(3), 1998, pp. 338–345.

[59] Kohut, H., How Does analysis cure? International Universities Press, New York NY, 1984.

[60] Wolf, E., Treating the self: Elements of clinical self psychology, Guilford Press, New York NY, 1988.

[61] D. Compeau and C.A. Higgins, "Application of Social Cognitive Theory to Training for Computer Skills", Information Systems Research, 6(2), 1995, pp. 118–143.

[62] Fukuyama, F. Trust: The Social Virtues and the Creation of Prosperity, Free Press, New York, 1995.

[63] D.L. Cowles, "The role of trust in customer relationships: Asking the right questions", Management Decision, 35(4), 1997, pp. 273-282.

[64] C. Wiertz and K. de Ruyter, "Beyond the call of duty: Why customers contribute to firm-hosted commercial online communities", Organization Studies, 28(3), 2007, pp. 347.

[65] I.Y.L. Chen, "The factors influencing members' continuance intentions in professional virtual communities - a longitudinal study", Journal of Information Science, 33(4), 2007, pp. 451.

[66] M.M. Wasko and S. Faraj, "Why should i share? examining social capital and knowledge contribution in electronic networks of Practice", MIS Quarterly, 29(1), 2005, pp. 35.

[67] D. Gefen, E. Karahanna and D.W. Straub, "Trust and TAM in online shopping: An integrated model", MIS Quarterly; Minneapolis, 27(1), 2003, pp. 51-90.

[68] P.A. Pavlou, "Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model", International Journal of Electronic Commerce, 7(3), M.E. Sharpe Inc, 2003, pp. 101-134.

[69] R.M. Morgan and S.D. Hunt "The commitment-trust theory of relationship marketing", Journal of Marketing, 58(3), 1994, pp. 20-40.

[70] F.R. Dwyer, P.H. Schurr, and S. Oh, "Developing buyer-seller relationships", Journal of Marketing, 51(2), 1987, pp. 11.

[71] D.H. Mcknight and N.L. Chervany, "What trust means in E-commerce customer relationships: An interdisciplinary conceptual typology" International Journal of Electronic Commerce, 6(2), 2001, pp. 35-59.

[72] D.H. McKnight, V. Choudhury and C. Kacmar "Developing and validating trust measures for e-commerce: An integrative typology" Information Systems Research, 13(3), 2002, pp. 334-359.

[73] R.C. Mayer, J.H. Davis and F.D. Schoorman, "An integration model of organizational trust" The Academy of Management Review, 20(3), 1995, pp. 709-735.

[74] A. Bandura, "Toward a unifying theory of behavioural change", Psychological Review, 84(2), 1977, pp. 191–215.

[75] Bandura, A., Self-Efficacy: The Exercise of Control, Freeman, New York NY, 1997.

[76] V. Venkatesh and M.G. Morris, "Why Don't Men Ever Stop to Ask for Directions? Gender, Social Influence, and Their Role in Technology Acceptance and Usage Behavior", MIS Quarterly, 24(1), 2000, pp. 115–139.

[77] R.E. Rice, A.E. Grant, J. Schmitz, and J. Torobin, "Individual and Network Influences on the Adoption and Perceived Outcomes of Electronic Messaging", Social Networks, 12(1), 1990, pp. 27–55.

[78] R.L. Thompson, C.A: Higgins, and J.M. Howell, "Personal Computing: Toward a Conceptual Model of Utilization", MIS Quarterly, 15(1), 1991, pp. 124–143.

[79] R.E. Burnkrant and A. Cousineau, "Informational and Normative Social Influence in Buyer Behavior", Journal of Consumer Research, 2(2), 1975, pp. 206–215.

[80] T.L. Childers and A.R. Rao, "The Influence of Familiar and Peer-Based Reference Groups on Consumer Decisions", Journal of Consumer Research, 19(2), 1992, pp. 198–211.

[81] D. Constant, L. Sproull, and S. Kiesler, "The kindness of strangers: The usefulness of electronic weak ties for technical advice", Organization Science, 7(2), 1996, pp. 119–135.

[82] L.G. Tornatzky and K.J. Klein, "Innovation Characteristics and Innovation Adoption-Implementation: A Meta-Analysis of Findings", IEEE Transactions on Engineering Management, 29(1), 1982, pp. 28–45.

[83] M.L. Markus, “Toward a ‘Critical Mass’ Theory of Interactive Media: Universal Access. In: Organizations and Communication Technology (pp. 194–218), ed. J. Fulk and C. Steinfield, Sage, Newbury Park CA, 1990.

[84] Shapiro, C. and H.R. Varian, Information Rules: A Strategic Guide to the Network Economy, Harvard Business School Press, Boston MA, 1999.

[85] S.M. Granovetter, “The Strenght of Weak Ties”, American Journal of Sociology, 78(6), 1973, pp. 1360–1380.

[86] S.M. Granovetter, “Threshold Models of Collective Behavior”, American Journal of Sociology, 83(6), 1978, pp. 1420–1443.

[86] S.M. Granovetter and R. Soong, “Threshold Models of Diffusion and Collective Behavior”, Journal of Mathematical Sociology, 9, 1983, pp. 165–179.

[87] M.L. Markus, “Toward a ‘Critical Mass’ Theory of Interactive Media: Universal Access, Interdependence and Diffusion”, Communication Research, 14(5), 1987, pp. 491–511.

[88] J. Hummel and U. Lechner, “Social Profiles of Virtual Communities”, In: 35th Annual Hawaii International Conference on Systems Sciences (HICCS’02), R. Sprague (Ed.), IEEE Press, Hilton Waikoloa Village, 2002.

[89] E. Noam, “Innovation, Networks, and Organizational Learning”, In: The Economics of Information Networks (pp. 91–102), ed. C. Antonelli, Elsevier Science Publishers, Amsterdam, 1992.

[90] D. Li, G.J. Browne and P.Y.K. Chau, "An empirical investigation of web site use using a commitment-based model", Decision Sciences, 37(3), 2006, pp. 427-444.

[91] D.W. McCloskey, "The importance of ease of use, usefulness, and trust to online consumers: An examination of the technology acceptance model with older consumers", Journal of Organizational and End User Computing, 18(3), 2006, pp. 47-65.

[92] A.V. Citrin, D.E. Spritt, S.N. Silverman, and D.E. Stem, “Adoption of Internet Shopping: The Role of Consumer Innovativeness”, Industrial Management and Data Systems, 100(7), 2000, pp. 294–300.

[93] R.E. Goldsmith and C.F. Hofacker, “Measuring Consumer Innovativeness”, Journal of the Academy of Marketing Science, 19(3), 1991, pp. 209–221.

[94] R.E. Goldsmith and C.F. Hofacker, “Identifying innovators in consumer product markets”, European Journal of Marketing, 26(12), 1992, pp. 42–55.

[95] R.E. Goldsmith, “Using the Domain Specific Innovativeness Scale to identify innovative Internet consumers”, Internet Research, 11(2), 2001, 149–158.

[96] R.E. Goldsmith, F. d’Hauteville, and L.R. Flynn, “Theory and measurement of consumer innovativeness: a transnational evaluation”, European Journal of Marketing, 32(3–4), 1998, pp. 340–353.