Investigating member commitment to virtual communities using an integrated perspective

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Abstract

Purpose – Although the number of virtual communities has increased dramatically over the past few years, attracting and maintaining members remains the biggest challenge to establishing virtual social networks. This study seeks to integrate the roles of individual factors (issue involvement), social factors (social interaction), and system factors (system interactivity), and to explore how these factors contribute to member commitment in virtual communities.

Design/methodology/approach – A total of 402 undergraduate students, who are all current members of virtual communities, participated in this study. Data were analyzed using structural equation modeling (SEM).

Findings – The findings reveal that member commitment to communities was influenced more by their issue involvement compared to their perceived social interaction or perceived system interactivity.

Originality/value – This research contributes to online community literature by integrating critical antecedent factors in the field of community commitment behavior. The findings indicate that issue involvement is more important than social interaction and system interactivity for influencing member commitment to communities. Additionally, the findings suggest that online community administrators should consider community positioning and topic selecting programs when attempting to influence users to commit to communities.

Keywords Community networks, Customer retention, Facilitators, Human-computer interaction, Social networking sites, User behaviour, User studies, Virtual worlds, Communities

Paper type Research paper

1. Introduction

Virtual communities provide a forum for people to interact and communicate in a computer-mediated environment. Virtual communities have increased rapidly (Smedberg, 2008) and have received widespread attention over the past decade (Shang *et al.*, 2006). However, despite significant growth in the number of virtual communities, relatively few communities have obtained member commitment (Gupta and Kim, 2007). Numerous marketing studies have documented that commitment is positively related to customer retention (Garbarino and Johnson, 1999; Hennig-Thurau *et al.*, 2002; Sirdeshmukh *et al.*, 2002; Antón *et al.*, 2007; Kaltcheva *et al.*, 2010). In the context of virtual communities, member commitment also has a significant influence

on voluntary behavior (Kim *et al.*, 2004), and the success of virtual communities (Wiertz and de Ruyter, 2007). Thus, the primary goal of online communities may be to persuade members to remain with and commit to the community.

Therefore, researchers are interested in understanding how to maintain community numbers. For example, previous studies examined the determinants of online community user participation from a social influence perspective. The results revealed that both social identity and group norms have significant effects on user participation (Zhou, 2011). Conversely, Lin (2007) examined the determinants of virtual community sustainability from a system perspective. The findings indicated that perceived usefulness and perceived ease of use determine the sustainability of virtual communities. Overall, research suggests that social factors and system characteristics influence an individual's intention to remain in a virtual community (Chen, 2007).

Involvement theory suggests that some people have more specific requirements than others (Phang *et al.*, 2010), and that consumer involvement can be attributed to individual characteristics (Phang *et al.*, 2010). Although involvement seems to be a critical factor in predicting individual attitudes and behavior (Ha and Lennon, 2010), the effects of issue involvement on commitment in the context of virtual communities have not been empirically tested. Understanding the effects of consumer characteristics on commitment is vital when designing a positioning program.

In addition, although the impact of social factors and system characteristics on an individual's intent to remain have been studied (for example, Chen, 2007), few studies integrated member characteristics into the framework as antecedent variables of member commitment. Thus, this study integrates the roles of individual factors (issue involvement), social factors (social interactivity), and system factors (system interactivity), and explores how these factors affect member commitment to online communities. The primary advantage of this framework is the consolidation of individual, social, and system factors as predictor variables, which can facilitate a greater understanding of how virtual community member commitment is formed.

2. Literature review and hypotheses development

A virtual community is a community that exists in computer-supported virtual space. They are an important method of social interaction in today's world (Jaeger and Xie, 2009). According to Steuer's communication model (1992), communication occurs not only between the sender and the receiver, but also between the user and the mediated environment with which they interact. Thus, online community interaction can be viewed from two conceptual angles. First, it can be considered social interaction, namely, community members communicate with other members through the online community platform. Second, the human-computer interaction of online communities can be considered from a technology interface perspective. Thus, virtual communities can focus on creating functional benefits that improve system interactivity from a technology perspective. By contrast, social interactions are more important from an interpersonal relationship perspective. In the e-commerce environment, both computer-mediated interpersonal interactions and human-computer interactions contribute to relationship quality (Sun, 2010). Previous studies have also suggested that social factors (sociability and social usefulness) and system factors (usability, information quality, and system quality) can be used to identify characteristics that influence the success of virtual communities (Preece, 2001; Lin, 2008).

Apart from social factors or system factors, virtual communities are self-selecting interactive groups of individuals, who are linked by common interests or goals (Pentina *et al.*, 2008). If an issue discussed in an online community is perceived as important, members are motivated to participate in this community. Thus, individual-related factors, such as each member's level of issue involvement, may influence the levels of online community participation, and the extent of member commitment. Based on these findings, this study suggests that the drivers of member commitment to virtual communities can be categorized into three groups: issue involvement, social interaction, and system interactivity.

2.1 The impact of the degree of issue involvement on member commitment

Member commitment refers to the bond between members and a virtual community. In this study, member commitment is defined as the member's belief that their ongoing relationship with the virtual community is important. This encourages them to remain attached to the community, and warrants them devoting maximum effort to this relationship. Virtual communities provide popular social environments where individuals interact by exchanging information, ideas, and advice regarding common interests (Chan and Li, 2010). Issue involvement relates to individuals' inherent requirements, interests, and values relating to a particular subject. Different people may have inherently different levels of involvement in a particular issue (Shang *et al.*, 2006). Similar to product involvement, issue involvement can be considered an enduring type of involvement. Motivation theory assumes that individuals join groups to facilitate their achievement of personal objectives (McCarthy, 2002). Previous studies suggested that the primary purpose and ultimate motivation for member participation in an online community is to search for information, and that members are motivated to search for information by their involvement in a particular issue (Shang *et al.*, 2006). Thus, individuals with greater involvement have higher motivation to invest effort in searching for additional information (Phang *et al.*, 2010). Because some topics discussed in virtual communities have greater relevance, interest, value, and importance to members, members may feel a deeper sense of belonging to this community, and thus care more about sustaining their relationship with the community. Recent management literature has reported that job involvement is among the most effective tools for enhancing employee commitment (Khan *et al.*, 2011). Other researchers have also suggested that involvement results in commitment, and that a highly involved consumer tends to commit more to their choice (Shang *et al.*, 2006). Thus, we propose the first hypothesis:

H1. Member's issue involvement has a positive influence on member commitment to virtual communities.

2.2 The impact of perceived social interaction on member commitment

In this study, perceived social interaction refers to member perception of the degree of interaction, communication, and familiarity with other members of the community. According to social capital theory, social interactions evolved to explain social relationships that are developed over time (Grabski *et al.*, 2011). The Internet has altered the way people interact; cyberspace has become a forum for social interaction. Lea *et al.* (2006) employed the social network concepts and design principles of virtual communities to promote and structure the social interactions among users of virtual

communities. The popularity of social interaction on the Internet is increasing, and members have an extremely high tendency to share their opinions and comments with other members of virtual communities (Kimiloglu, 2004). Virtual communities offer the potential to foster member-to-member interaction, and to develop conversations among members within the community (Szmigin *et al.*, 2005). Therefore, few would dispute the notion that social interaction is critical for the evolution and building of close interpersonal relationships (Berger, 2005). Previous studies have suggested that interactions over a specific duration may lead to online community commitment (Chu and Chan, 2009), and that encouraging interpersonal interaction increases this commitment (Gupta and Kim, 2007). Research has also suggested that, based on a strong psychological attachment, members' active participation increases their commitment to a virtual community (Ku, 2011). Doney *et al.* (2007) found that social interactions had a positive influence on commitment to a relationship. Thus, we propose our second hypothesis:

H2. Perceived social interaction has a positive influence on member commitment to virtual communities.

2.3 The impact of perceived system interactivity on relationship commitment
System interactivity refers to users' interaction with technology. Perceived system interactivity refers to the perceived interaction between a web site and a user of that site in a computer-mediated communication environment (Hoffman and Novak, 1996; Merrilees and Fry, 2003). System interactivity focuses on the ability of the community site's technology to provide feedback to the member. Valuable technology attributes of online communities are ease of use, intuitiveness, and effectiveness, which can promptly feedback to the user. Generally, the value users place on e-commerce systems is influenced by system quality (Osei-Bryson *et al.*, 2008), which typically includes the ease of use, intuitiveness, flexibility, and response time of an information system (Petter *et al.*, 2008). A previous study further suggested that system quality affects relationship quality, which subsequently has a significant impact on customer commitment (Sun, 2010). Thus, this study reasonably assumes that a positive perception held by members regarding a virtual community site's ease of use and ability to perform expected activities contributes to their commitment to that virtual community. Based on these arguments, we propose the following hypothesis:

H3. Perceived system interactivity has a positive influence on member commitment to virtual communities.

3. Method
Participants were undergraduate students from four universities in Taiwan. Survey data were collected during class time at these universities. Undergraduate students were selected as the sample for this study because they are already familiar with virtual community services. According to a recent survey conducted by Taiwan Network Information Center (TWNIC), 85.68 per cent of Internet users aged 20 to 24 are virtual community users (TWNIC, 2011). Because the research context (virtual communities) is relevant to undergraduate students, using them as the study sample is appropriate. Students who were members of virtual communities were asked to voluntarily participate while in their classes. They were questioned regarding their

perception of the virtual community of which they were a member. The survey
objective and the importance of their cooperation was emphasized. A two-page survey
questionnaire was provided to all voluntary participants. The questionnaire instructed
students to consider their "currently most visited online community," and to use scales
to report their perceptions of that virtual community. Among the 658 undergraduate
students, 408 voluntarily participated in this study, achieving a response rate of 62%.
Six of the returned questionnaires had at least one unanswered question; therefore,
they were eliminated from the sample. This resulted in a final sample of 400, which
comprised an equal number of male and female participants. This study used Box's M
statistics to test the homogeneity of the covariance matrices of the four data sets. The
results indicate that the respondent questionnaires were the same for the four
universities ($p = 0.09 > 0.05$). Therefore, the four data sets were aggregated for
further analysis.

3.1 Measures

The questionnaire comprised four major constructs: perceived issue involvement,
perceived social interaction, perceived system interactivity, and member commitment.
All constructs were measured using multi-item scales that had been validated in
previous research. Certain items were modified to represent the research context.
Perceived issue involvement was measured using ten items, which were modified from
the measure developed by Zaichkowsky (1994). The four items regarding perceived
social interaction used in this study were adopted from the measure developed by Chiu
et al. (2006). Perceived system interactivity was measured using three items developed
by Peng *et al.* (2004). Member commitment was measured using four items developed
by Garbarino and Johnson (1999). All items were measured using a seven-point Likert
scale, which ranged from 1 "strongly disagree" to 7 "strongly agree."

4. Data analysis and results

Data analysis involved two main phases. First, whether the measurement items
possessed appropriate properties to represent their respective constructs was tested
through confirmatory factor analysis (CFA) using LISREL 8.7. This study employed
the chi-squared test, comparative fit index (CFI), incremental fit index (IFI),
goodness-of-fit index (GFI), and root mean square error of approximation (RMSEA) to
evaluate the model fit. Reliability of the scale items was tested using composite
reliability (CR) and average variance extracted (AVE), as suggested in literature (de
Matos *et al.*, 2007). Next, to test the hypotheses, we performed structural equation
modeling (SEM), examining the effects of issue involvement, social interactivity, and
system interactivity on member commitment.

4.1 Measurement accuracy analysis

Table I shows the descriptive statistics of the research constructs measures, including
their individual mean values, standard deviations, and correlations among measures.

Results of the measurement model analysis indicated that the model fits the data
well, with χ^2/df $(651.1/183) = 3.56$, CFI $= 0.97$, GFI $= 0.87$, NFI $= 0.96$, and
RMSEA $= 0.08$. The chi-squared to degrees-of-freedom ratio (χ^2/df) ranged between
1.0 and 5.0, the CFI and NFI both exceeded 0.90, and the RMSEA value ranged between
0.05 and 0.08, all indicating a good model fit to the data (Hair *et al.*, 1998).

Subsequently, the reliability of the items was tested. CR and AVE values were the two indices used to assess the reliability; their thresholds were set at 0.7 and 0.5, respectively (Komiak and Benbasat, 2006). In this study, the CR scores for every construct, which ranged from 0.75 to 0.94, were all significantly above 0.70, the suggested benchmark for acceptable reliability. The AVE scores for every construct ranged from 0.51 to 0.69, which satisfies the requirement. All the values were above the required level (see Table II), which indicates that the measurement items have high reliability. AVE can also be used to evaluate discriminant validity. To satisfy the requirements for discriminant validity, the square root of AVE for each construct must be greater than the value of each construct. Table II shows that the average variance extracted for each latent factor exceeds the respective squared correlation between the factors, demonstrating discriminant validity.

4.2 Results of predicted effect and hypotheses tests

Indices of the predicted model were within accepted thresholds. As shown in Figure 1, the GFI (at 0.97), RMSEA (at 0.08), CFI (at 0.97), IFI at (0.97), NFI at (0.96), and the χ^2 to degrees-of-freedom ratio at 3.55, were all within the accepted thresholds suggested in literature (Hair *et al.*, 1998). The hypothesis coefficients are also shown in Figure 1. Perceived issue involvement ($\gamma 11 = 0.55, p < 0.001$) and social interaction ($\gamma 21 = 0.25, p < 0.001$) had a significant influence on relationship commitment. Thus, *H1* and *H2* are supported. However, the impact of system interactivity on member commitment to an online community is not significant, with $\gamma 31 = 0.07, p > 0.05$. Thus, *H3* is not supported.

Stepwise multiple regression analysis was also conducted to assess the differential effects of dependent variables on independent variables (Atuahene-Gima, 1993; Williams *et al.*, 2008; Kim *et al.*, 2008). The stepwise procedure yielded three models, as shown in Table III. The first model incorporated only issue involvement, which explained approximately 40 per cent of quality-measure variance. The second model incorporated social interactivity, which increased the quality-measure variance to approximately 47 per cent. However, when we incorporated system interactivity into the third model, the quality-measure variance increased minimally. The results reveal that perceived issue involvement is the most influential factor in member commitment models.

5. Conclusion

We propose that commitment is derived from a combination of individual, social, and system factors. The findings of this study reveal that individual factors (member's issue involvement) and social factors (perceived social interactivity) contribute significantly to member commitment to an online community. This study finds that

Research constructs	Mean	SD	II	SI	PI	RC
Issue involvement (II)	4.93	0.91	1.00			
Perceived social interactions (SI)	4.92	1.12	0.37	1.00		
Perceived system interactivity (PI)	5.22	0.97	0.53	0.47	1.00	
Relationship commitment (RC)	4.53	0.99	0.64	0.46	0.48	1.00

Notes: Scores: 1 – Strongly disagree; 4 – Neutral; 7 – Strongly agree

Table I.
Correlation between research constructs

Research constructs	Measurement items	Factor loading	C.R.	AVE
Issue involvement	The issue discussed in the online community is important to me.	0.73	0.94	0.60
	The issue discussed in the online community is interesting to me.	0.73		
	The issue discussed in the online community is related to me.	0.67		
	The issue discussed in the online community is exciting to me.	0.81		
	The issue discussed in the online community is means a lot to me.	0.78		
	The issue discussed in the online community is appealing to me.	0.84		
	The issue discussed in the online community is fascinating to me.	0.83		
	The issue discussed in the online community is valuable to me.	0.77		
	The issue discussed in the online community is involving to me.	0.80		
	The issue discussed in the online community is needed to me.	0.74		
Perceived social interactions	I maintain close social relationships with some members in the online community.	0.81	0.87	0.63
	I spend a lot of time interacting with some members in the online community.	0.73		
	I know some members in the online community on a personal level.	0.74		
	I have frequent communication with some members in the online community.	0.89		
Perceived system interactivity	I feel that this online community system is fast.	0.69	0.75	0.51
	I feel there are lots of things for me to manipulate in this online community system.	0.64		
	I feel it's easy and intuitive to interact with this online community system.	0.80		
Relationship commitment (RC)	I am proud to belong to this online community	0.83	0.90	0.69
	I feel a sense of belonging to this online community	0.89		
	I care about the long-term success of this online community	0.80		
	I am a loyal patron of this online community.	0.79		

Table II.
Accuracy analysis
statistics

users commit to a virtual community through issue involvement and social interactivity, and allocate a higher priority to issue involvement when deciding whether to commit to an online community. Although previous studies have found that community interaction influences members' community commitment more than system quality does (Jang *et al.*, 2008), this paper provides further empirical evidence that the most important predictor of member commitment to an online community is the member's issue involvement.
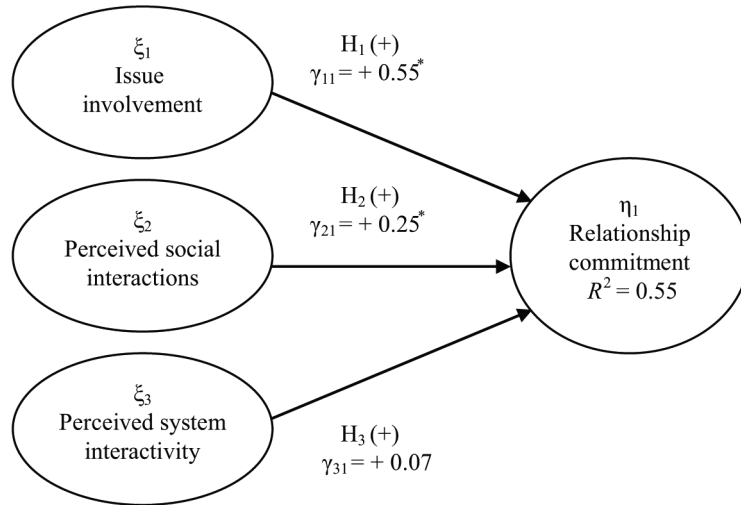
Figure 1.
Research model and results

Notes: (+) refers to the sign of the proposed hypotheses as positive.
Model Goodness-of-Fit Measures: Absolute-Fit measures: x^2: 650.53; df: 183;
$p < 0.001$; GFI: 0.87; RMSEA: 0.08; Incremental-Fit measures: CFI: 0.97;
NFI: 0.96; IFI: 0.97; Parsimonious-Fit measures: x^2/df: 3.55; *$p < 0.001$

Model		Standardized coefficients Beta	t	Sig.
1	(Constant)		5.314	0.000
	Issue involvement	0.640	16.678	0.000
2	(Constant)		2.274	0.023
	Issue involvement	0.544	13.841	0.000
	Perceived social interactions	259	6.579	0.000
3	(Constant)		1.302	0.194
	Issue involvement	0.497	11.476	0.000
	Perceived social interactions	0.222	5.310	0.000
	Perceived system interactivity	0.115	2.507	0.013

Note: [a]Dependent: Relationship commitment

Table III.
Results of the stepwise regression of member commitment

5.1 Managerial implications

With the increasing importance of virtual communities, and the growing number of communities in cyberspace, administrators must to increase their understanding of how to retain and develop member commitment. Administrators must ensure they apply appropriate effort in building relationship commitment. Based on the findings of this study, issue involvement is more important for persuading a member to commit to a virtual community compared to social interactivity and system interactivity. That is, individuals who are interested in the issues discussed by the community have a greater intent to remain with the community. Therefore, the first contribution of this study is

the suggestion that current members' interests be used to determine application positioning, and to select discussion topics. This research suggests that online community administrators can encourage member commitment by presenting and discussing topics that interest current members of the community. By understanding the effect of issue involvement, administrators should also focus on consistency between a discussion topic and the community's position. Therefore, administrators are reminded to select interesting and important topics that relate to the community's position to develop relationship commitment among their members.

The second contribution of this study is to provide insight into improving member commitment by encouraging social interaction. The results reveal that social interaction is also a significant factor for developing commitment. Therefore, administrators should increase their encouragement of member-to-member interaction. Management literature has reported that buyer perceptions of social norms can increase buyer-to-seller interaction (Lee *et al.*, 2009). Therefore, social pressures that motivate members to continually participate in community activities may be employed as a relationship-retaining strategy. In summary, integrating the impact of issue involvement, social interaction, and system interactivity on relationship commitment in the context of virtual communities is valuable. The findings enhance our understanding of the effects of individual, social, and system factors on developing member commitment to a virtual community.

5.2 Research limitations and future directions
Although the nature of this research has inevitable shortcomings, our future research suggestions compensate for these limitations. First, this study focused only on students of universities in Taiwan. Because we selected a research context relevant to students, they were used as subjects. However, studies applying these findings to the overall population should employ caution. The next step involves replicating these findings in a more general context. Second, this study examined the three categories of individual, social, and system factors that had the potential to influence user commitment. Cheung and Lee (2009) indicated that individual-related factors, such as purposive value and self-discovery, significantly impact user satisfaction, which consequently has a significant impact on member behavioral intentions toward online community environments. By exploring potential antecedent variables, such as individual-related factors, future research can provide additional insightful guidelines to help online administrators develop commitment strategies. Third, this study was based only on overall perceptions of virtual communities. Future research should identify and explore other situational factors, such as different online community characteristics (for example, commercial and non-commercial communities). Future studies must clarify this significant validation concern by selecting different community characteristics. Online community administrators strive to increase users' willingness to remain in a community. Therefore, understanding how to retain users has become a crucial topic of online consumer behavior. Additional academic research is required to enhance our understanding of the predictors of member commitment patterns.

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