Implication of Social Presence on Loyalty in Virtual Community

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ABSTRACT—*This study aims to explore whether social presence exhibits an important factor in computer-supported community, using the social presence perspective to analyze how media features and personal factors influence user behavior of virtual community. A survey was conducted on Gamebase which covers four types of virtual communities. Empirical data were gathered using online questionnaire with 254 respondents. The result showed that communication richness of social presence contributes to the virtual community loyalty, while medium richness does not influence virtual community loyalty. Results indicated that reciprocal interaction and interpersonal trust have positive effects on medium richness, whereas social interaction and interpersonal connection have positive effects on communication richness.*

Keywords—Social presence, Virtual community, Loyalty

1. INTRODUCTION

Virtual community (VC) is a group of users who share and interact within a common platform of interests or purposes [1] [2]. This new type of community enables higher-level interaction and closer communication for users and members. A VC platform must be created that is similar to a face-to-face context, but one that also provides members more control over the timing and content of their self-disclosure. The concept is social presence, derived from the research of computer-mediated communication (CMC).

Social presence theory regards social presence as an inherent quality in a communication medium [3]. Social presence users interact with other members through a specific medium that can perceive intimacy and real-time interaction. User interaction is similar to face-to-face interaction. Social presence theory, which relies on the computer network as a medium, has been widely used in electronic commerce and e-learning. The current study considers VC using the computer network as a medium in the same context as electronic commerce and e-learning, but users in different situations have distinct motivations of participating. Hence the social presence of VC should differ from electronic commerce and e-learning studies. Previous studies addressing the components within social presence in online VC are limited. This study combines social presence and online communication perspectives to analyze usage behavior of VC to fill the gap in existing literature.

Existing related studies of VC have mostly focused on trust relationships [4] [5] or knowledge sharing [6] [7]. Previous literature also shows the positive effects of media features and personal factors on social presence [8] [9] [10]. This study considers media features as the VC platform supported by computer-based information technology, and personal factors as the interpersonal relationship and motivation for members using VC[6]. This research investigates the influence of different motives and interpersonal relationships on social presence and the influence of social presence on VC member loyalty.

2. LITERATURE REVIEW AND DISCUSSION

2.1 Social presence

Social presence indicates that communication between persons can produce warm, personal, and sociable psychological perceptions [11]. Social presence represents a user who feels psychological closeness, such as talking in person when communicating with others through a specific medium and learns from communication research. Short et al. [3] considered social presence the subjective evaluation of intimacy and immediacy in media. Gunawardena and Zittle [12] specified that social presence differs according to different users because of varying media features and the effects of intimacy and immediacy.

So and Brush [13] and Wellman et al [14] discovered that using computer-mediated communication not only

enhances information sharing, but also obtains social support. Therefore, media that provide more communication cues are judged as personal and sociable, and having high information richness. Hence, communication medium is an important indicator to measure social presence. We define a communication medium as VC members who feel social presence by developing friendships and interpersonal relationships with other members.

Simon [15] considered online social presence and information richness interrelated. High information richness can reduce ambiguity and user risk, and increase willingness to join or stay in the community. Certain medium characteristics also determine social presence, such as feedback speed, the number of cues, and language variety. Hence, medium richness is another important indicator related to information richness. We define medium richness as members who sufficiently express and understand syntax and emotion with each other to feel social presence when communicating with other members.

2.2 The relationships between VC usage motive and social presence

Hagel and Armstrong [15] classified VC into four types based on needs: interest, interpersonal relationship, fantasy, and transaction. Social cognitive theory [16] states that human behavior is a dynamic and reciprocal interaction of personal factors, behavior, and social networks. A virtual community is an online social network in which people reciprocate to share information and knowledge, and engage in social interactions to improve self-worth [04] Thus, the motives for participating in VC, derived from the social interactions and resources reciprocated within the network, sustain virtual communities.

The studies of Dholakia et al [17], Ruggiero [18], and Simon [15] revealed sharing information as the important motive of VC usage, based on reciprocal interaction. The research result of Rice [19], Balasubramanian, and Mahajan [20], and Dholakia et al [17] also showed social interaction as another important motive.

This study separates motive into reciprocal interaction and social interaction. Social interaction focuses on generated social benefit by building relationships or connections among members. Reciprocal interaction focuses on obtaining or sharing information. Rice [19] used social presence theory to compare and analyze traditional and online media. The results reveal that voicemail and e-mail have less value than face-to-face meetings because they lack social presence. This also reveals the significance of social interaction on the social presence of online media. Users emphasize communication richness more than medium richness if the purpose is to make friends and build relationships in a community.

H1: Social interaction has positive effect on communication richness

Reciprocal interaction indicates that members join the community due to specific information. We believe that different motives represent different demands for VC. The purpose of reciprocal interaction is to gain specific information, which may focus on medium richness among members, which can help members conveniently obtain required information. A virtual community offers various functions to enable members to interact effectively, including creating a high degree of information sharing, enabling members to obtain virtual face-to-face communication.

H2: Reciprocal interaction has positive effect on medium richness

2.3 The relationships between online social network and social presence

Social support is generated by interacting with members and forming online social networks [21]. Chiu et al [6]. indicated that online interpersonal relationships affect social interaction and knowledge sharing. Trust, reciprocity norm, and identification also develop as indicators to measure online interpersonal relationships. House [22] and Thoits [23] considered social support as supportive behavior among humans, including emotional support, positive support, and tangible support.

Social capital theory asserts that the social capital and relationship networks a person possesses strongly influence the extent to which interpersonal knowledge sharing occurs [24], and defined three distinct dimensions of social capital: structural, relational, and cognitive. Chiu et al. [6], Thoits [23], and House [22] discovered interpersonal connection as the important construct of online interpersonal relationship, which refers to the structure and relation of social capital. The studies by Chiu et al. [6] and Hagel and Armstrong [25] revealed trust as another important construct of online interpersonal relationship, similar to social capital cognition. This study defines interpersonal connection as connective patterns and relationships among members that benefit from each other and consider all members as part of the same group. We define interpersonal trust as a community of members who trust each other to offer supportive behavior, in which all members are moral and trustworthy.

Interpersonal connection and interpersonal trust are two essential factors of an online social network. Members can feel social presence through structure and relation in an online network, and those resources provide shared experience among parties [26]. Chiu et al. [2] indicated that the online interpersonal relationships of members influence the intention

and effect of knowledge sharing. A high perception of interpersonal connection results in enhanced willingness to share and help other members. Hence, members can feel psychological closeness and enhance social presence. We believe that members who have good interpersonal relationships may interact with others easily and build relationships to feel social presence. Interpersonal connection influences relationship building and enhances communication effects, which generate different degrees of social presence.

H3: Interpersonal connection has positive effect on communication richness

Users in a VC context are affected by interpersonal trust because all members share resources, help each other, and benefit from each other, and consider all members as part of the same group [6] [25]. This study considers the positive effect of interpersonal trust on medium richness because users trust the mechanical characteristics of the medium that require solving differences of views and opinions among members.

H4: Interpersonal trust has positive effect on medium richness

2.4 The relationships between social presence and VC loyalty

Lin [27] considered member loyalty a necessary condition to manage long-term VC. Harris and Goode [28] derived loyalty generation by cognitive affective, conative, and action. This research defines member loyalty as members' attitudes toward VC and willingness to join in the long term and interact with other members.

Communication richness can provide social support [26] and tangible support to form assistance among members. Using cognitive and affective concepts can increase member loyalty [29]. Conversely, medium richness can help members express and understand each other sufficiently using conative and action concepts. Hence, communication richness helps members develop friendships, and medium richness assists members to understand emotions. Both communication richness and medium richness can help deliver social support among members [23] and continuously exist between members and community to generate loyalty.

H5: Communication richness has positive effect on member loyalty

H6: Medium richness ***has positive effect on member loyalty***

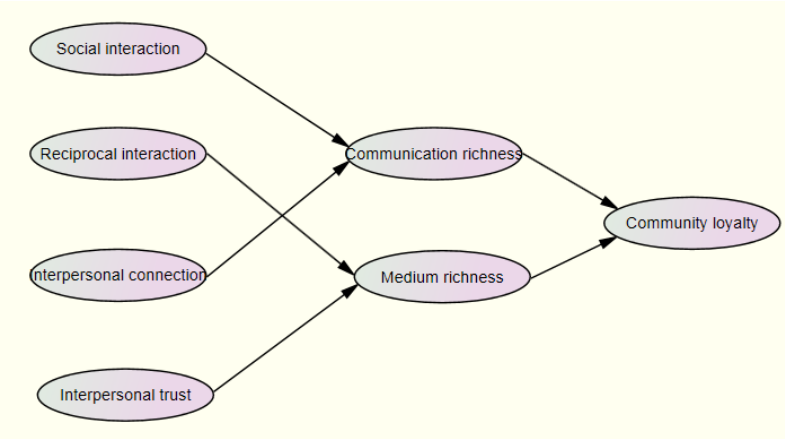

Figure 1: Research framework

3. RESEARCH METHOD

3.1 Measure of Variables

We measured social presence using a revised scale of student perceptions of collaborative learning and satisfaction in a blended learning computer environment with 17 items from So and Brush [13]. Based on the research by Chiu et al. [6] , online social networks on knowledge sharing in virtual communities are measured on an 11–item scale. The construct of motive of community participation require a 19-item scale, based on the research of VC value perception by Dholakia et al. [17]. This study used a 5-item scale revised from Srinivasan et al. [29] and Lin [27] to measure community loyalty.

3.2 Pre-survey test

To enhance measurement validity, this study conducted a pretest on VC members through an online survey. To ensure that samples were covered by the four types of VC [25], the four types of VC are Yahoo Kimo's NBA Club, Facebook's Tamkang University, Gamebase's online game, and PTT's practical workshop transaction area for a total sample of 281. The results suggested that the construct of social presence extract two dimensions of communication richness and medium richness; that the construct of motive of community participation identify two dimensions of social interaction and reciprocal interaction; that the construct of online social network obtain two dimensions of interpersonal connections and interpersonal trust; and that the construct of community loyalty only extract one dimension.

The dimensions extracted from each construct are consistent with the above literature review. Analysis of the revised scale exhibits a good level of internal consistency, with item-total correlations ranging from 0.52 to 0.81, and factor loadings ranging from 0.64 to 0.90. All indicator Cronbach's α values are larger than 0.86, and extracted variance is higher than 0.65 on their respective dimensions, all within the acceptable range.

3.3 Samples and Data Collection

This study used the Gamebase community as the target community, founded in 2000, and which provided the Taiwan game player a place to exchange information. The Gamebase host site has a bulletin board listing of over 1,200 boards, with at least 2.25 million traffic volume hits per month, which cover the four types of VCs this study required. With the help of webmasters, this study posted online survey link on bulletin boards to collect data from respondents. Participants were recruited from the Gamebase population using convenience sampling, contacting respondents through online communities. The data collection period spanned from January 20, 2012, to April 30, 2012. The total number of valid responses was 254.

4. RESULTS

4.1 Demographic statistics

254 questionnaires were used in the final data analysis. Nearly 34% of respondents like to visit the fantasy community, and 31.1% like visiting the interest community. The surveyed sample consisted of more males than females because this community is focused on game information. Most participants were between 19 and 35 years of age. Sixty-one percent (61.4%) of participants visit Gamebase daily, 37% of who stay on the web site for more than thirty minutes each time.

4.2 Construct scale analysis

Table 1 indicates internal consistency for these dimensions was above 0.79, with item-total correlations ranging from 0.60 to 0.82. All indicator factor loadings were higher than 0.61 on their respective dimensions. This scale shows a good level of internal consistency, with the same results of factor analysis in the pilot study. Social presence indentifies the communication richness and medium richness factors the same as the pilot test, accounting for 67.56% of variance produced by the scale. Motive of community participation extracts a two-factor solution accounting for 68.46% of the scale variance, which is social interaction and reciprocal interaction. The two factors of interpersonal connections and interpersonal trust account for 70.31% of the variance obtained from the online social network, the same dimensions as the pilot test. Community loyalty has only one dimension, accounting for 74.00% of scale variance.

4.3 Measurement model tests

Using confirmatory factor analysis, satisfactory model fits are χ^2 /df = 1.87, RMSEA = 0.06, GFI = 0.82, AGFI = 0.80, and NNFI, IFI, and CFI values greater than 0.90. The statistics are almost within the acceptable range, which indicates a good model fit.

All indicator factor loadings have a significant t-value ranging from 0.69 to 0.88 on their respective constructs. The composite reliability values have a range from 0.79 to 0.92, whereas the whole range of average variance extracted is from 0.57 to 0.66 for each latent construct. These results confirm the convergent validity of the indicators. This study adopted the chi-squire difference in all two-factor CFA tests that restricted the factor inter-correlations to unity. All chi-squire differences in two-factor CFA tests were significant (greater than 3.84). These results suggest that measurements exhibited adequate discriminate validity. In summary, the measurement model fit the data well.

4.4 Structure model assessment

The results of hypotheses testing are presented in Table 2. All the hypothesized paths, with the exception of that

linking medium richness and community loyalty (H6), were significant ($p < .05$), which provides initial evidence for our conceptual model. This table presents the estimated coefficients for the structural model, together with the R^2 indicator for each latent endogenous variable, and the associated t-values of the paths of the research model (asterisks represent significant paths).

Table 1: Item analysis and EFA analysis

Constructs	Factors		Mean value	Cronbach's Test		Factor analysis	
				Item-total	α Value	Loading	AC%
Social Presence	Communication Richness	Item 1	3.69	0.73	0.85	0.90	36.72%
		Item 2		0.73		0.87	
		Item 3		0.65		0.67	
		Item 4		0.63		0.65	
		Item 5		0.60		0.61	
	Medium Richness	Item6	3.88	0.60	0.79	0.78	67.56%
		Item7		0.66		0.81	
		Item8		0.64		0.83	
Online Social Network	Interpersonal Connection	Item 1	3.43	0.75	0.90	0.80	36.74%
		Item 2		0.77		0.84	
		Item 3		0.73		0.67	
		Item 4		0.67		0.64	
		Item 5		0.76		0.81	
		Item 6		0.70		0.73	
	Interpersonal Trust	Item 7	3.97	0.71	0.89	0.84	68.46
		Item 8		0.73		0.81	
		Item 9		0.70		0.73	
		Item10		0.73		0.68	
		Item 11		0.74		0.69	
Motive of VC Participating	Reciprocal interaction	Item 1	3.97	0.79	0.92	0.86	41.56%
		Item 2		0.79		0.84	
		Item 3		0.70		0.70	
		Item 4		0.71		0.70	
		Item 5		0.71		0.79	
		Item 6		0.77		0.84	
		Item 7		0.72		0.78	
	Social interaction	Item 8	3.55	0.67	0.88	0.73	70.31%
		Item 9		0.74		0.79	
		Item10		0.82		0.91	
		Item 11		0.75		0.89	
Community Loyalty		Item 1	3.92	0.70	0.88	0.83	0.74
		Item 2		0.81		0.91	
		Item 3		0.77		0.88	

Table 3: Path Coefficients

paths	estimate	S.E	P value	R^2
Reciprocal interaction -- -> Medium Richness	0.54*	0.08	0.00	
Social interaction -- -> Communication Richness	0.19*	0.07	0.01	
Interpersonal Connections--->Communication Richness	0.82*	0.10	0.00	
Interpersonal Trus ---> Medium Richness	0.21*	0.05	0.00	
Communication Richness ---> Community Loyalty	0.80*	0.09	0.00	
Medium Richness ---> Community Loyalty	-0.06	0.07	0.35	
endogenous variable				
Communication Richness				0.91
Medium Richness				0.56
Community Loyalty				0.78

The model showed that the motivation of reciprocal interaction manifested positive effects on the medium richness of social presence (β = 0.54; t = 6.81), providing empirical support for H1. The results of the relationship between motivation of social interaction and communication richness of social presence agree with the expectation that social interaction significantly affects communication richness (β = 0.19; t = 2.56), supporting H2. This study shows that the different motivations of VC participation affect various social presences.

This study showed that interpersonal connections of an online social network affect communication richness in social presence, and are statistically significant at the .05 level (β = 0.82, t = 8.28), supporting H3. Interpersonal trust of social network has a significant positive effect on medium richness of social presence, with a path coefficient of 0.21 (t = 4.06), supporting H4. Consequently, this study also presents that the different factors of online social network have different effects on factors of social presence.

From Table 3, communication richness of social presence has a positive effect on member loyalty of VC, with β = 0.80; t = 9.22, supporting H5. In comparison, medium richness did not have a significant influence on VC loyalty, failing to support H6. Communication richness is a greater cause of VC loyalty than medium richness.

5. CONCLUSION AND IMPLICATION

This study found that social presence occurs when a user joins a VC because of reciprocal interaction, and can interact with others based on medium richness. Social presence also occurs when a user joins a VC because of social interaction and communication richness with other members as friends or partners. The results also reveal that interpersonal connection and interpersonal trust have positive effects on communication richness and medium richness separately. Results indicate that managers must create medium richness if a community belongs to a specific area of information sharing such as computer hardware or software. Medium richness can deliver real-time messages and high-level interaction. Conversely, managers must focus on communication richness if a community's purpose is to facilitate forming friendships.

Communication richness and medium richness are two factors of social presence in VC. Compared to a real life social network, online VC lacks social presence with members who have more diverse social characteristics than are normally encountered in person. This allows VC to develop relationships based on shared interest instead of social status. However, only communication richness has positive effect on member loyalty. Communication richness means members can develop friendships or partnerships with others in the VC. Lin27 found that system characteristics (information and system quality) and social factors (trust and social usefulness) have an effect on implementing successful virtual communities. The paper did not include the viewpoint of technical perspectives, neglecting the influence of system characteristic and system quality on social presence, to provide an explanation for why medium richness of social presence has no effect on community loyalty. Sanchez-Franco Manuel and Rondan-Cataluna [30] showed that both member satisfaction and belonging to the community were determinants of member loyalty in the community. The members' sense of belonging is similar to the factor of communication richness in social presence; therefore, communication richness has positive effect on community loyalty, whereas medium richness of social presence has no direct effect on community loyalt y [30].

Finally, this study suggests that future researches investigate additional professional communities such as Blizzard. System quality is also a factor that must be accounted for in medium richness. Comparing a real life social network with an online interpersonal relationship in the VC is also a direction for future study.

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