

## **The Effect of Anonymity on Virtual Communities Usage - Facebook versus BBS**

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### **Abstract**

Social Network Services (SNS) have developed rapidly in recent years, making many virtual communities become insignificant. The traditional virtual communities of the past almost always allowed members to post their works or articles anonymously. However, SNS works differently, requiring members to register and login using their real names. In order to research the influence of anonymity on the willingness of a virtual community member to publish an article, this study is based on social influence factors. Furthermore, the motivational factor of "desire" is added into the model of goal-directed behavior (MGB) as are the "social influence factor" and the intermediary factor of "on-going willingness to publish an article" incorporated too. This study adopts the articles "Facebook community to represent non-anonymity" and the "PTT community to represent anonymity" as the research samples, to discuss the influence of anonymity on social influence factors, desire and the willingness to publish an article by community members with anonymity as a moderating variable.

The results show that anonymity has an obvious moderating effect on the desire to publish an article. Although the relationship between cause and effect is changed by anonymity, it does not influence the intention to continue posting articles. In other words, anonymity is not the key issue influencing members' decisions to post articles.

*Keywords: Anonymity, social influence, desire, virtual community*

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## **1. Introduction**

### **1.1 Background and Research Objectives**

While innovations in virtual communities on the Internet are occurring regularly, in Taiwan, however, the BBS has been largely unaffected. Looking at Taiwan's largest BBS website "PTT" as an example, thousands of people visit the site at the same time every day. While the biggest feature of PTT is the same as other communities, a big difference is that people can post articles and responses anonymously. Because of this anonymity, the PTT community often has a lot of articles, and since the community is "people" oriented, there are many discussion boards for every pos-

sible interest to be found on PTT. The three most famous features of PTT are anonymity, first-hand information, and the number of articles; these are important factors that have promoted Taiwan's BBS boom.

In addition to BBS, the rapid development of global social network services (SNS) in recent years has also influenced Taiwan's virtual communities. SNS is the most popular Web 2.0 product after blogging and Wikipedia. Community members can conduct real-time interaction, share photos and communicate with each other. These core values of SNS are rapidly developing on the Internet. Facebook is the world's most representative SNS, which itself has a very important feature, the "real-name system", which means that members must apply for the account using their

real names and friends on the web are mutually aware of each other's identities. Since Facebook requires members to use their real names, the more information a member discloses, the more the members see their virtual identity as their real "self", making interaction among members easier.

Although more traditional anonymous settings allow community members to actively express their views and discuss them with others, Facebook's rapid development and its real-name system has left other community sites feeling relatively confused. In order to understand whether anonymity affects virtual community members' posting intentions, this study has adopted two hypothetical situations representing anonymous and not anonymous: "PTT" and "Facebook," respectively, as research objects.

In the past, Perugini and Bagozzi (2001) explained that the behavior of people is not only affected by "intention", but also by "motivation". The present study also used the Model of Goal-directed Behavior (MGB) developed by Perugini and Bagozzi (2001) to determine whether the "posting motivation" of community members is likely to affect their "continuous posting intentions". This study also wanted to understand the influence of social factors on the posting intention of community members within situational changes, with the influence of social factors on posting motivation as the basis, and the different contextual factors (anonymous and non-anonymous) as moderator variables. Therefore, this study used "anonymity" as the operating situation and aims to answer the following questions:

1. Does "anonymity" affect the virtual community members' motives and intentions to publish articles?
2. What are the different social impact types on the community as experienced by members?

## **2. Literature Review**

### **2.1 MGB Related Research**

The Model of Goal-directed Behavior (MGB) proposed by Perugini and Bagozzi in 2001 is based on the Theory of Planned Behavior (TPB) by Ajzen (1985). Thus, a thorough understanding of the concept of TPB is required before furthering our knowledge of MGB. Ajzen officially raised the framework for TPB in 1991 to explain how humans systematically collate information affecting their personality before deciding on their actions and behavior, with their intentions being the best way to predict their behavior. Therefore, one's "behavior" is mainly influenced by "intention", and the said "intention" is influenced by one's "attitude", "subjective norm", and "perceived behavioral control".

Bagozzi and Dholakia (2002) applied social influence theory and personal factors to explore the intentions of people joining a virtual community. Dholakia, Bagozzi and Pearo (2004) further incorporated two key factors of social influence theory into the MGB, namely group norms and social identity, in order to understand the reasons why members participate in a virtual community. Carrus, Passafaro and Bonnes (2008) used the MGB Model to predict the intentions of people using public transportation to commute to work instead of the family car. Lee, Song, Bendle, Kim and Han (2011) used the MGB Model to explain the influence of non-pharmaceutical interventions (NPI) on the travelling intentions of international tourists during the H1N1 flu outbreak. Past studies have pointed out that "social influence theory" has affected the intentions of members to join and continuously participate in virtual communities. A virtual community is different from an information system executed independently by a single individual in that its establishment, development, and maintenance depend on common use by many people (groups) for its continuous existence. Compared to the traditional attitude theory framework that holds the

I-Intention opinion and adopts new skills only by relying on personal factors (attitude or social pressure), engaging in discussion/exploration by accepting and adopting collaborative skills through the method of We-Intention is better. Therefore,

this study has decided to exclude individual factors and only discusses the influence of social influence theory on desire and intention. A schematic representation of MGB is shown in Figure 1.

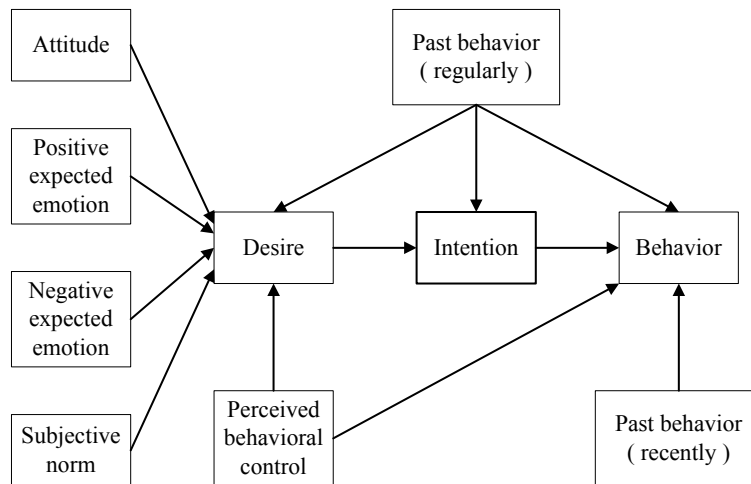


Figure 1: Model of Goal-directed Behavior (MGB)  
Data Source: Perugini and Bagozzi (2001)

## 2.2 Social Influence

Social influence refers to the influence that some external factors have on behavior, with the exception of personal factors; such external factors may include peer pressure, group norms, community cohesion, community classification, etc., and are likely to have a significant influence on an individual's decisions. Furthermore, social influence consists of the degree to which people are influenced by social interactions (Rice et al., 1990). Past researchers of social influence have said that compliance, acknowledgment, and internalization cause the individual behavior models of persuading another or accepting another's opinions (Kelman, 1961). After an individual forms a cognitive critical mass, they will influence the trends of which system is used because the critical masses are simultaneously affected by the social influence factors of both informational and normative influences (Lou et al., 2000).

Venkatesh's (2003) studies have shown that the perspective of social influence has a positive relationship with behavioral intention. The social influence of external factors on individual behavior can be categorized into informational influence and normative influence (Venkatesh, 2003). Informational influence means that a user believes that the information offered by other people or groups is reliable and is willing to accept this information as true. Normative influence means that a user complies with the expectations of other people or groups in order to acquire the acknowledgment of others. In the TPB model, the subjective norms are the social factors used to explain the intention and behavior predictors. Ajzen (1985) believed that certain types of social pressure would cause people to change their intentions and behavior. Furthermore, Wellman & Wortley (1990) explained that strong community ties were a very important factor for knowledge sharing. Some studies have supported the concept finding that social

identity encourages members to make a contribution to and participate in the community to which they belong (Dholakia, Bagozzi, & Pearo, 2004). Therefore, this study used the social influence research of past scholars to understand which factors affect the posting intentions of members in a virtual community.

Bagozzi and Dholakia (2002) also based their research on the MGB Model, including three social factors that affect members' participation in the virtual community, that is, "group norms", "subjective norms" and "social identity". Bagozzi and Dholakia (2002) explained that social identity had the greatest influence on the desire to participate. In addition to social identity, the authors concluded that subjective norms as a social factor should have a certain influence on this research purpose. Bock, Zmud, Kim and Lee (2005) considered that subjective norms had a positive effect on knowledge sharing. Although the TPB model used subjective norms as the social influence factor, many previous studies had pointed at a redefinition of the "norms", including the "descriptive norms", to increase the explanatory power of norms. In addition to "social identity", "subjective norms" and "descriptive norms", the study also included a fourth social influence factor, "social interaction ties". The authors believed that the interaction between members of the virtual community increased or the members retained a close relationship with each other, thus enhancing the posting motivation of the community members.

The social interaction tie is a structural dimension developed from the social capital theory, which refers to the personal or social relation network. In addition to being the main resource in the network, it strongly influences the occurrence of knowledge sharing behavior between people (Nahapiet & Ghoshal, 1998). They also defined social capital theory as consisting of the following three dimensions:

1. Structural dimension: the connection of each behavior in one's overall environment
2. Relational dimension: relationships produced by the interaction between people
3. Cognitive dimension: manifestation patterns of acts of resource sharing

The social interaction tie falls within the structural dimensions of the social capital theory and refers to the strength, depth, and width of the connection of each member to their respective environment.

### **2.3 Anonymity**

Anonymity refers to individuals doing something without using their real name or letting others know who they are; in other words, individuals can perform certain tasks without revealing their true identities (Nissenbaum, 1999). This is one of the principal differences between virtual communities and real communities. Most members of a virtual community are nameless and are free to conduct various activities anonymously, such as posting, responding, online trading, playing games, etc. The anonymous features allow members of the virtual community to deal with matters without others knowing their true identities.

Some researchers also believe that if meetings implemented an anonymous system, group members would speak more actively and express their views more freely. Since, in such a situation, the members could not see each other and would not know each others' true identities, the pressure of group consistency would be reduced (Nunamaker, Dennis, Valacich, Vogel, & George, 1991). However, in the virtual community, identities are separate from real world identities. In other words, members are able to create a different role and use this role to do something that they would usually not dare to do or are unable to do if they had to use their real name. Most online forums now use anonymity in order to allow members to discuss each other and speak on a highly free platform.

Because online forums need more members to provide more knowledge on the platform, anonymity may allow members to have more opportunities to discuss topics with each other on the forum itself.

Grijpink and Prins (2001) divided anonymity into three categories: whether the self-imposed pseudonym had, in any way, to create a personal identity; whether the pseudonym was allocated by a third party organization; or whether the personal identity was verified by a third party organization. However, this study focused on the posting intention of members on Facebook and PTT, using Facebook as the same name object and PTT as the different name object. Although Facebook claims to be a real-name platform, the majority of members do not use their real name on the platform. Nevertheless, community friends are familiar with each other. However, in the PTT community, members do not know the true identity of other members. Chesney and Su (2010) conducted an anonymous blog and blogger-related study and found that, anonymous or not, the credibility of the blogs and the bloggers showed no significant differences. Valkenburg, Peter and Schouten (2006) explained that young people in an anonymous network environment are less concerned about their appearance, and the anonymous system helps young people to disclose personal information on the network.

### **3. Methods**

#### **3.1 Research Framework and Hypotheses**

This study was in response to Facebook's recent real-name system investigation of whether the anonymous system would have an impact on the posting inten-

tion of community members and aims to understand whether or not the system would change, increase or decrease the posting intentions of community members, with social factors as the moderating variables. In addition to the above factors, the author also references the MGB Model, stating "desire" as the behavioral intention antecedent for understanding the posting motivation of community users. Regarding operational anonymity, this study used the Facebook community to represent non-anonymity and the PTT community to represent anonymity so as to explain the relationships between the social factors, desire and posting intentions in the two different situations.

This study's hypothesis considers the entire virtual community as the research mainline and anonymity as the moderator variable in order to compare the two representative communities of Facebook and PTT and to understand the influence of anonymity on the posting motivation and intention of community members.

This study utilized four social factors as the desire antecedents: social interaction ties, subjective norms, descriptive norms and social identity, to boost the personal potential motives, and included "anonymity" as the control variable in order to analyze the posting intention of users. Therefore, the purpose of this study was to explore, in different situations (anonymous and non-anonymous), whether these social influence factors would change members' posting motivations and intentions, that is, whether anonymity and non-anonymity are important influencing factors for members in the current virtual communities. This study, therefore proposed the following framework, as shown in Figure 2:

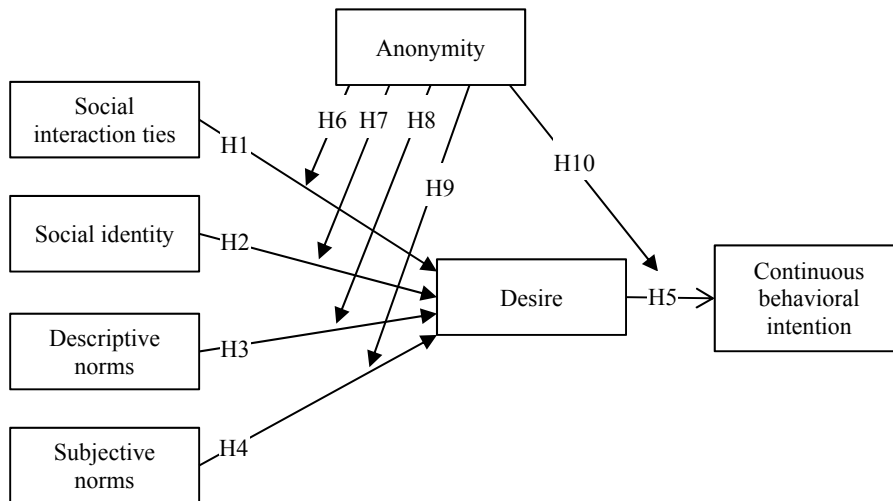


Figure 2: Framework of the Study

### 3.1.1 Social influence factors and desire

#### 3.1.1.1 Social interaction ties

Nahapiet and Ghoshal (1998) suggested that social interaction ties linked two points through constant interaction, so the higher the social interaction ties, the higher the degree of information-sharing. Granovetter (1973) suggested that the strength of this relationship could be used to display the members' time spent, emotional consistency, closeness and reciprocal services during the social interaction. By referring to Chiu's (2006) and other scholars' definitions of social interaction ties and the above results, this study defined social interaction ties in the community as, "the strength of a relationship between community members, the time spent on communication with each other, and the number of communications." Tsai and Ghoshal (1998) also believe that stronger social interaction ties between members could promote the exchange and combination of resources. Other studies have also agreed that the high degree of the social interaction environment could encourage community members to acquire better knowledge-exchange behavior (Chiu, et al., 2006; Wellman & Wortley, 1990). Although the present study has taken "posting motivation and intention" as its research theme, the authors believe

that emotional communication also belongs among information-sharing and knowledge-exchange. The research conclusions thus reference previous literature regarding information-sharing and knowledge-exchange. Therefore, this study suggests that stronger social interaction ties provide members with a greater desire to post.

*H1: The stronger the social interaction ties, the higher the posting desire motivation of community members.*

#### 3.1.1.2 Social identity

Social identity allows members to maintain a positive identity in the community and to have more motivation to participate in community activities. Based on past research, social identity was broadly categorized into members who have a sense of belonging to the community and community members who associate "social characteristics" with "self-concept". Nahapiet and Ghoshal (1998) also mentioned that social identity involved a process through which individuals identified themselves and other members or groups as belonging to the same group. Based on the historical definition of social identity, the author of this study defined social identity as "individuals with a sense of belonging to virtual communities and a positive feeling

regarding the virtual community.” By using the MGB Model to explore the factors affecting community members involved in the community, Bagozzi and Dholakia (2002) also believed that social identity was an important factor. Nahapiet and Ghoshal (1998) stated that social identity was a motive for promoting the exchange of knowledge among members. Chiu et al. (2006) suggested that the stronger the community identity was, the more knowledge-sharing behavior occurred. This study’s aim was to explore whether social factors affect the continuous posting intention of community members, and, because the virtual community has different kinds of members, the authors concluded that community members could find like-minded companions or interested community groups within this community. Therefore, they would post more, thus creating a sense of belonging, as well as positive feelings toward the community. Moreover, posting was also a way to participate in community activities and share information among members. Therefore, this study concluded that the greater the social identity, the higher the posting motivation of community members.

*H2: The higher the social identity, the higher the posting desire motivation of community members.*

### **3.1.1.3 Subjective norms and descriptive norms**

Descriptive norms refer to individuals observing whether the people around them participate in a particular behavior and how these people or groups do it. Ravis and Sheeran (2003) also believe that the TPB model can include descriptive norms as social factors. Although the MGB Model does not include descriptive norms as an antecedent, Fishbein and Yzer (2003) indicated that the model should have included both imperative norms and descriptive norms in order to increase the explanatory power of the norms. However, imperative norms do not exist in the community. Therefore, this study defined the descriptive norm as when people observe others in

the community who are important to them, and these people are doing something, they will think that they ought to do the same. Therefore, according to past studies on descriptive norms, the study included them to increase the power of norms to explain community members’ posting habits.

Based on the above discussion, this study deduced the following hypothesis:

*H3: The higher the descriptive norms, the higher the posting desire motivation of community members.*

Subjective norms refer to the perceived social pressure of individuals developing certain behavioral intentions. The higher the social pressure support or agreement, the higher the behavioral intention (Ajzen, 1985). According to the antecedents of the MGB Model, Perugini and Bagozzi (2001) suggested that the agreement or support of the people close to us was another factor affecting motivation. This study used the motivation factor of the MGB Model to better understand the antecedents of the posting intention of community members and concluded that, when the community members adapted certain behavior, the higher the perceived social pressure, the higher the posting motivation.

Based on the above discussion, this study deduced the following hypothesis:

*H4: The higher the subjective norms, the higher the posting desire motivation of community members.*

### **3.1.2 Desire and continuous behavioral intention**

Based on the MGB Model of Perugini and Bagozzi (2001), desire provided the most direct motivation for behavioral intentions and was an important motivational factor in the decision-making process. Bagozzi and Dholakia (2002) also used desire as the mediator of the social influence factor and intention to explain why people joined virtual communities. Dholakia, Bagozzi and Pearo (2004) also explored why virtual community members initially join a community and suggested that desire was

the important mediating factor affecting members and compelling them to join.

Studies in the past have suggested that intention and desire were two different levels of feeling. Desire involved personal motivational factors, that is, people had a strong desire to do something, but did not have any plans or planned actions; Intention involves a strong personal purpose, that is, people already had the planned intention or at least the definite idea to want to do something.

To better distinguish between intention and desire, the present study defined intention as planned or continuous, that is, the continuous posting intention of a community member; desire was defined as when members want to do something due to a certain motivation.

Therefore, community members were assumed to already have some motivational factors before having continuous posting intention, that is, people wanted other community members to have a better understanding of them through their posted articles and then had a continuous posting intention. Therefore, this study suggests that a higher motivation would have a higher influence on continuous posting intention.

Based on the above discussion, this study developed the following hypothesis:

*H5: The higher the posting desire motivation of community members, the higher the continuous posting intention will be*

### **3.1.3 Anonymity and social influence factors**

The authors of this study used the anonymity definition of Jane Hanson (1998) to distinguish the virtual community. Whether anonymous or not, in this study it was defined as “different name” and “real name”. The different name refers to community members who use another identity in the virtual world, so that other community members do not know their true identities. The real name refers to a community member who will use their real identity in the virtual world, but only their community

of friends will know it. The study considered the entire virtual community as its research subject and anonymity as the moderating variable to compare the two representative communities of “Facebook” (real-name) and “PTT” (different name) in order to understand the influence of anonymity on the posting motivation and intention of community members.

Nissenbaum (1999) defined anonymity as “people being able to do something without disclosing their personal identity”. Many experimental studies have shown that anonymity changes the intention of “social influence” (Postmes, Spears, Sakhel, & De Groot, 2001; Postmes, Spears, Lee, & Novak, 2005). Nunamaker et al. (1991) suggested that anonymity reduces the pressure caused by group consistency, so members would be able to speak more freely. Zhang Xiuhua, Zeng Hualien and Zhouhui Wen (2007) also indicated that, whether introverted or extroverted members, anonymity would make it easier for all users to express their opinions. In other words, anonymity enhanced posting intention. Therefore, based on the conclusions of previous research, anonymity would mediate social influence and posting intention would be changed by whether an anonymous system was adopted or not. Therefore, this study determined the following hypothesis:

*H6: Anonymity will affect the overall research model of causality.*

## **3.2 Operationalization of Research Variables**

### **3.2.1 Social identity**

This study used social identity as defined by Chen (2008) and the social identity scale modified by Chiu et al. (2006). Chiu et al. (2006) suggested that social identity referred to a sense of belonging and the subsequent positive feeling of the individuals towards the virtual community. Chen (2008) explored the knowledge-sharing behavior of the Fashion Guide virtual community, while Chiu et al. (2006) explored the knowledge-sharing



behavior of the BlueShop virtual community. This study references the questionnaire scales developed by the two aforementioned studies and adapted the scales based on the two different situations of this study.

### **3.2.2 Subjective norms**

This study references the definition of subjective norms by Ajzen (2002) and Yang (2006); Yang (2006) defined subjective norms as “Members felt that some people within the group were important to themselves, and that these people thought that they should share knowledge.” Therefore, this study referenced the questionnaire scale developed by Yang (2006) and adapted the scales to the situations of this study.

### **3.2.3 Descriptive norms**

Descriptive norms refer to individuals observing whether the people around them participate in a particular behavior and how these people or groups do so. This study references the questions of the descriptive norms developed by Yang (2006) and adapts them to meet the situations of this study.

### **3.2.4 Social interaction ties**

In this study, social interaction ties are defined as the interactive relationship between community members and its intensity. This item further used social interaction ties as defined by Chiu et al. (2006) and Chen (2008), as “the relationship strength between virtual community members, the time spent communicating with each other and the communication frequency.” Therefore, the operationalization was based on Chen (2008) for the design of the questions related to social interaction ties.

### **3.2.5 Desire**

Perugini and Bagozzi (2001) defined desire as individuals’ motivation before creating a behavioral intention, and determined that this was the key condition influencing policymakers’ behavioral intentions. This study defines desire as the fol-

lowing: “the posting motivation of the virtual community members to let other members have a better understanding of themselves”. Therefore, the operationalization was based on the desire questionnaire of Perugini and Bagozzi (2001).

### **3.2.6 Continuous posting intention**

According to Perugini and Bagozzi (2001), intention meant that the individuals had a planned idea before doing something, and would have a series of continuous behavior during the predetermined period. Meanwhile, desire meant that the individuals had strong motivation without any planned ideas before doing something. This study defines “continuous behavioral intentions” as the intention of members to continue to post articles.

Therefore, the operationalization was based on the scales of Chen (2007) and Zhang, Fang, Wei, and Chen (2010). Zhang et al. (2010) explored the knowledge-sharing intention of the virtual community with an objective similar to that of this study.

## **3.3 Questionnaire Design and Sample**

This study’s questionnaire used questions from past research with good reliability and validity and determined the most appropriate questions based on the virtual communities’ (Facebook and PTT) situations and operationalization constructs. Every item has been discussed and adapted by a group consisting of one professor from an information technology institute, five doctoral students from an information technology institute, and three postgraduates. All these questions were measured using a seven-point Likert scale. This study’s aim was to explore whether anonymity would have a moderating effect on the influence of social factors regarding the posting intention of community members, with the virtual community as the study object and anonymity as the moderating variable. Therefore, this study chose Facebook as the non-anonymous (real name) virtual community object and Taiwan’s largest BBS website, PTT, as the anony-

mous (different name) virtual community object.

#### 4. Data Analysis

##### 4.1 Sample Basic Data Analysis

The questionnaire for this study was distributed from March 12 to April 3, 2011, a period of 23 days. This study adopted the convenience sampling method with two main sample sources: Facebook and PTT. A total of 785 valid questionnaires were returned, and the following texts conduct a narrative statistical analysis of the valid samples and discuss the two communities, respectively.

In the valid samples, regarding gender, the ratio of males (49.29%) was slightly lower than the ratio of females (50.7%). Regarding occupation, most subjects were students (63.44%) and office workers (22.93%), the total population of those two groups accounted for more than 80% of the total sample. Regarding academic qualification, most participants had university degrees (69.17%), followed by institute qualifications (25.86%); the university degree ratio for PTT was higher than for Facebook (73%:62%), while the institute qualification ratio of PTT was lower than Facebook (20%:36%). The daily time spent on the forums was mainly 1 to 2 hours at most (34.52%), followed by 2 to 4 hours (27.39%); a single login time on the forums was mainly for 10 to 20 minutes at most (25.6%), followed by 5 to 10 minutes (21.4%). Finally, most of the members rarely posted articles on the forums (50.32%); more than half of the Facebook members would post articles at least once every one or two days (53%), while the PTT members scarcely posted articles at all (66%).

In addition to demographics, the questionnaire also included the following community question: "Most of my friends know my true identity," to determine the two varieties of community hypothesis: real name and different name. The results were generally in line with the proposed expectations (Table 1).

Table 1: The Statistical Analysis of the Members' Representative Identities in the Community

Hypothesis	PTT	Facebook
Know my identity	33	292
Do not know my identity	493	16

##### 4.2 Questionnaire Reliability and Validity Testing

This study used Cronbach's  $\alpha$  and composite reliability (CR) to ensure the accuracy of the measurements. With regards to validity, this study used both convergent validity and discriminant validity. The measurement methods of convergent validity were factor loadings and average variance extracted (AVE); the greater the AVE, the smaller the relative measurement error. The judgement criterion of the discriminant validity was the square root of the construct AVE, which was greater than the correlation coefficients between constructs.

###### 4.2.1 Reliability analysis

Reliability refers to the consistency or stability between the measurements, meaning that the scores for the same questionnaire among the same group must be consistent. Reliability is usually measured by Cronbach's  $\alpha$ , composite reliability (CR) and the average variance extracted (AVE). Table 2 below lists the reliability measurement scores of the various constructs used in this study.

Table 2: Cronbach's  $\alpha$ ; CR values; AVE and Testing Results of Various Constructs

Constructs	Cronbach's $\alpha$	CR	AVE
Social interaction ties	0.937	0.955	0.841
Social identity	0.855	0.897	0.636
Descriptive norms	0.905	0.892	0.805
Subjective norms	0.758	0.955	0.931
Desire	0.880	0.926	0.807
Continuous intentions	0.912	0.939	0.796

Source: This Study

#### 4.2.2 Validity analysis

This study used confirmatory factor analysis (CFA) to determine the convergent validity, and the results showed that the factor loadings of all variables were greater than 0.5, proving that the factor loadings of the questions were not too low, so this study did not have to remove any questions.

Consequently, the questionnaire had good convergent validity. Table 3 shows that the square roots of all the constructs' AVEs were greater than the correlation coefficients between constructs. Therefore, the questionnaire had good discriminant validity.

Table 3: Correlation Coefficient Matrix of Different Constructs

Constructs	SIT	SI	DN	SN	DE	INS
SIT	(0.9171)					
SI	0.5534	(0.7975)				
DN	0.7244	0.5450	(0.8972)			
SN	0.7359	0.5714	0.7169	(0.9649)		
DE	0.3863	0.5243	0.3985	0.4171	(0.8983)	
INS	0.4103	0.5392	0.4183	0.4137	0.7297	(0.8922)

### 4.3 Results

#### 4.3.1 Goodness of fit test of the overall model

This study used LISREL 8.7, maximum likelihood estimation (MLE) and structural equation modeling (SEM) to obtain the parameter estimations. Table 4

shows that the results for this study are CFI = 0.98, NFI = 0.98, NNFI = 0.97, GFI = 0.89, and AGFI = 0.84. These values are in line with the recommended standard values from previous literature. Therefore, the theoretical model of this study has a considerable goodness of fit.

Table 4: The Goodness of Fit Indicator of the Overall Model

Indicator	Measurement values	Recommended values	Sources of recommended values
CFI	0.98	> 0.9	Bentler (1986)
NFI	0.98	> 0.9	Hair et al. (1998)
NNFI	0.97	> 0.9	Hair et al. (1998)
GFI	0.89	> 0.8	Browne & Cudeck (1993)
AGFI	0.84	> 0.8	Hu & Bentler (1999)

Source: This Study

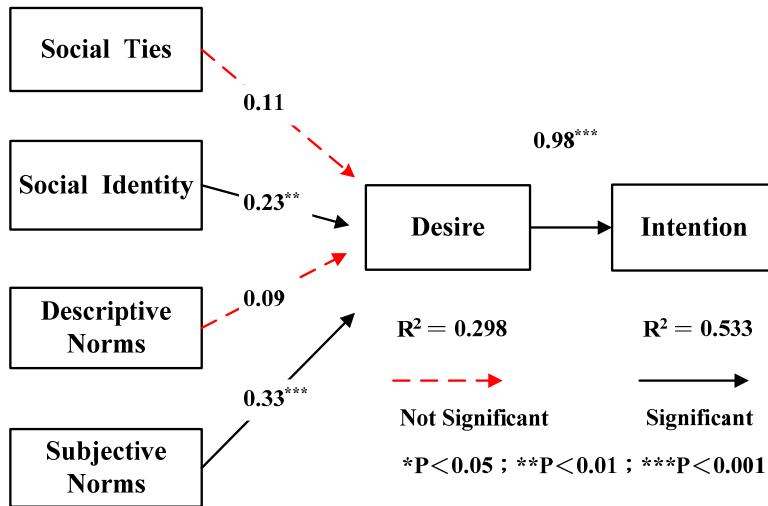


Figure 3: The Complete Standardized Structural Equation Modeling Results of all the Samples (PTT and FB)  
Source: This Study

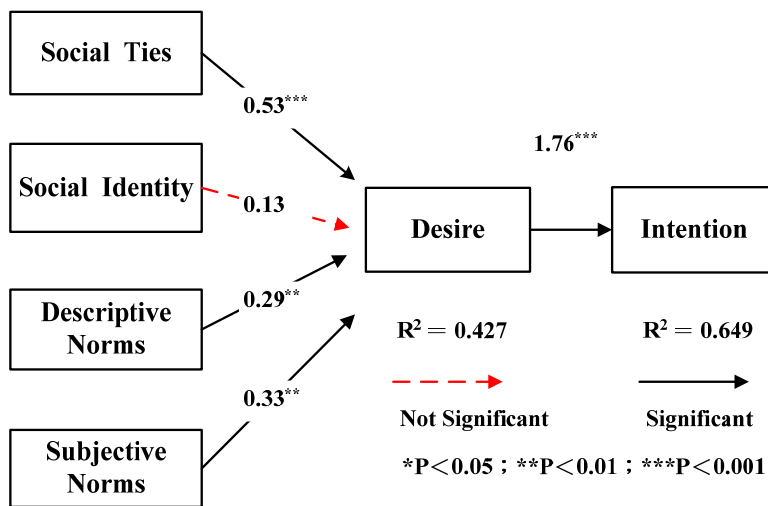


Figure 4: The Complete Standardized Structural Equation Modeling Results of Facebook Samples  
Source: This Study

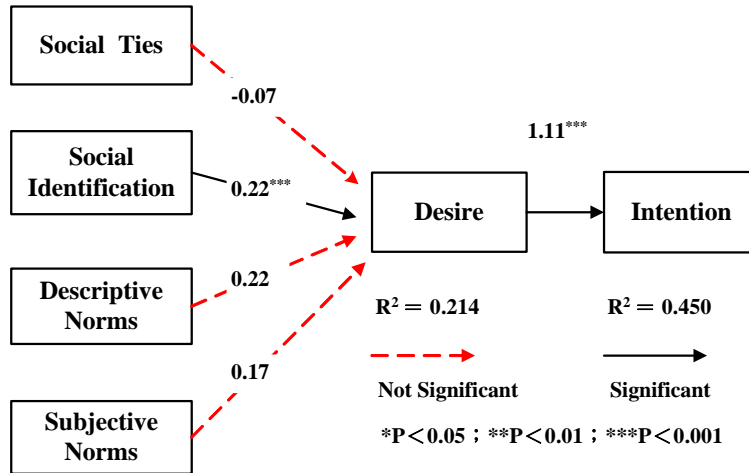


Figure 5: The Complete Standardized Structural Equation Modeling Results of PTT Samples  
Source: This Study

#### 4.4 Brief Summary

Using the virtual community as its basis, this study compared the two representative communities of Facebook and PTT to explore the influence of anonymity on posting desire and continuous posting

intention. According to the above tests and analyses, the goodness of fit in this study was within the acceptable range, and all hypotheses had a significant influence, with the exception of H2 and H6 (Table 5).

Table 5: Hypothesis Test Results

Hypothesis	Description	Supported or not
H1	The stronger the social interaction ties, the higher the posting desire motivation of community members.	Not Supported
H2	The higher the social identity, the higher the posting desire motivation of community members.	Supported
H3	The higher the descriptive norms, the higher the posting desire motivation of community members.	Not Supported
H4	The higher the subjective norms, the higher the posting desire motivation of community members.	Supported
H5	The higher the posting desire motivation of community members, the higher the continuous posting intention.	Supported
H6	Anonymity has a moderating effect on the relationship between social interaction ties and posting desire.	Supported

Source: This Study

## 5. Conclusions and Recommendations

### 5.1 Results and Discussions

#### 5.1.1 Overall virtual community

The results have determined that social identity and subjective norms of the social influence factors affect the posting desire motivation of members, showing that subjective norms and social identity

have a positive influence on posting desire motivation. This is consistent with the research of both Bagozzi and Dholakia (2002) and Perugini and Bagozzi (2001), who suggested that a sense of belonging and the importance of people's support would positively encourage members of the virtual community to post articles.

The posting desire motivation was found to influence continuous posting intention, which was consistent with the ma-

jority of previous studies that used the MGB research model (Bagozzi & Dholakia, 2002; Dholakia et al., 2004; Carrus et al., 2008; Lee et al., 2011). In other words, the higher the posting desire motivation, the higher the continuous posting intention.

In this study, social interaction ties and descriptive norms were not supported. Social interaction ties were defined as “the relationship strength between virtual community members, the time spent communicating with each other and the communication frequency”, and descriptive norms were defined as “individuals observing whether the people around them participate with a particular behavior and how these people do so”. These definitions were not supported by the entire virtual community in this study, and the authors have speculated that these results might be due to the two different virtual communities and the different sample size obtained by this study. Consequently, the following texts first explore the moderating effect of anonymity on the research model and then discuss the two different communities individually.

### **5.1.2 The moderating effect of anonymity**

This study uses two different virtual communities to explore the effects of anonymity. Hypothesis H6 proposed in this study had significant support, showing that anonymity can mediate the influence of the four social influence factors of social interaction ties, social identity, descriptive norms and subjective norms, on posting desire. In other words, whether the community is anonymous or not affects the influence of social factors on the posting desire motivation of members of the virtual community. This result is consistent with the results of many past studies related to anonymity, which have indicated that anonymity had a moderating effect on the strength of social influence factors (Postmes et al., 2001; Postmes et al., 2005).

This study also explains that anonymity does not affect the relationship between posting desire and continuous posting intention, so hypothesis H10 was not signifi-

cantly supported. Based on this result, the authors speculated the following:

First, this study focused on the influence of anonymity on the members of virtual communities to post articles, but the results of the present study show that anonymity does not affect members' posting intentions. Although previous studies have shown that anonymous situations make people more willing to speak out, no such strengths were found in the virtual community. Regarding members' speaking or posting intentions, anonymity is no longer one of the major reasons members join a community or participate in community activities. Therefore, this study has reasoned that anonymity does not receive sufficient attention in today's virtual community, and thus does not have a considerable moderating effect.

Second, this study chose two different kinds of communities rather than a single kind, and the members of the two different communities might have diverse community perceptions. For example, Facebook is a virtual community dominated by a social network, in which community members want to pursue links between friends and family members or express their opinions on a community platform. In other words, for this kind of SNS platform, the majority of the community members participate in most of the activities for the purpose of achieving “emotional communication”, such as posting articles, replying to articles, expressing support, playing games, and so on. On the other hand, regarding PTT, this kind of BBS community has members that mostly want to search for information or knowledge on the platform, in other words, this type of platform is a tool. These types of BBS communities are based on group billboards or common purpose billboards; for example, e-shopping focuses on online shopping, so members do not express personal feelings on the integrated platform. However, because of the anonymous system, they are willing to post first-hand information, or initiate group activities on the platform. The members of this platform

participate in activities for the purpose of information exchange. Consequently, this platform is not the same as those of the SNS community, such as Facebook. Therefore, this study has concluded that anonymity has no significant moderating effect on posting desire or continuous posting intention.

### **5.1.3 Facebook**

This study discussed the social influence factor on posting desire, but found no significant relationship between community identity and posting desire in the Facebook community. However, the other three social factors proposed in this study, social interaction ties, descriptive norms and subjective norms, had a significant effect on posting desire, which caused the author to conclude that:

First, as previously mentioned, the Facebook community is a SNS platform based on emotional communication, so the results showed that social interaction ties had a strong influence on posting intention. However, the Facebook community is not a “purposeful” community, meaning that the main reason members join the community is not because they have a common goal. Therefore, such communities may just be a platform for current community members to contact or communicate emotionally with each other. They leave posts, but not because they share a sense of identity with these types of community.

Second, most Facebook members use their real name in the community, moving their own identity in real life to the virtual world, so their role in the virtual world can clearly refer to who they really are. The most important people to some members, such as family members, friends or colleagues, might also appear in the same virtual community. Therefore, the norms between the community members have a more direct influence on posting desire.

In this study, posting desire also had a significant influence on continuous posting intention. The results indicate that the higher the posting desire motivation of the

Facebook community members, the higher the continuous posting intention.

### **5.1.4 PTT**

Regarding the PTT community, only social identity significantly influenced posting desire. Therefore, when exploring the influence of social factors on posting desire, the author concluded that:

First, PTT is an anonymous community, where most members have a virtual identity and do not know the true identity of the other members. As discussed earlier, the main goal of members in such communities is to exchange information. Based on the two factors above, members have little interaction with other community members. In fact, most members appear only as virtual characters to the other members, even for important people who join the PTT. Therefore, this study concluded that, under the influence of anonymity, norms and social interaction ties did not significantly influence posting intention.

Second, the PTT samples of this study were collected from a number of famous PTT communities, where most members shared a common purpose when joining the community. For example, the reason the Elephants’ members join the community is because they support the Elephants team. Therefore, regarding this kind of PTT community, most members have a sense of identity or a sense of belonging. These communities are not easy to replace in Taiwan because they have a lot of members, and members will quickly provide first-hand information to other members, thus creating the current BBS wave in Taiwan. Therefore, this study concluded that, because most samples had a common purpose, social identity significantly influenced posting desire.

## **5.2 Contributions**

Much of the previous related literature studied a single community (Chesney & Su, 2010; Valkenburg et al., 2006) or the laboratory research method (Zhang Xiuhua, et al., 2007) to explore anonymity. Although most of the prior studies showed that

anonymous situations would cause members to produce different behavior in the virtual community, very few of these studies had compared two different communities. The author has indicated that the influence of the anonymous or non-anonymous system on the virtual community does not apply to the real world. Therefore, this study took two different kinds of communities to explore whether anonymity would affect the current virtual communities.

The results suggest that, although anonymity changes the social influence factors (social interaction ties, social identity, descriptive norms and subjective norms) regarding posting motivation, it did not have much influence on posting intention. Therefore, in addition to the mediating effect of anonymity, future research could explore the influence of a larger variety of factors on the posting intention of community members.

### **5.3 Managerial Implications**

#### ***5.3.1 The importance of the anonymous or non-anonymous system on the virtual community***

This study explains that, even if anonymity has a mediating effect on social influence factors and posting motivation, it did not significantly influence continuous posting intention. This result shows that the members of the virtual world are no longer concerned with whether their comments are anonymous or not in the virtual world, as well as the posting intentions of the community members. For example, with regards to the Facebook community, most friends know each other, so there is no anonymity in the community, and the members do not seem to prioritize anonymity as they did in previous virtual communities. Most previous virtual communities provided an anonymous system for members to discuss and post articles. However, the Facebook community is now flourishing with everyone using their real names. Along with the results of this study, community managers or founders can deter-

mine whether the anonymous or non-anonymous system is still an essential factor in the current virtual community environment.

#### ***5.3.2 Social influence focused on different kinds of virtual communities***

This study suggests that social factors did not have the same influence on the two different kinds of virtual communities. With regards to the Facebook community, social identity did not have a positive influence on posting desire. However, the reverse is true with regards to the PTT community, as social identity had the greatest influence. Because Facebook focuses on emotional communication, while PTT is a platform on which members have the main objectives of common purpose and information exchange, the different types of member have different reasons for participating on the two platforms. According to the results of this study, community managers can focus on the varying social factors influencing the different communities. Taking Facebook as an example, the members emphasize interaction with each other, as well as norms (descriptive norms and subjective norms) between members, but they have no sense of belonging to this community. Therefore, if managers can provide better interactive ways and content for members or find a way to strengthen the norms between members, such as fostering more interaction while playing social network games, these factors will encourage members to post more articles in the community. However, regarding the PTT community, the members emphasize a sense of identity, focusing on the correctness and rapidity of information exchange in these communities. Therefore, more topics and information for members to query, browse, and comment on, etc. will have a better influence on the posting intentions of the community members.



## 5.4. Limitations and Suggestions for Future Research

### 5.4.1 Sample size difference

This study sampled members of two different types of virtual communities, with the sample size from Facebook being considerably smaller than the PTT due to the collection time and costs involved. Therefore, this study had different sample proportions regarding the two communities. Furthermore, only two communities were discussed, but there are many other active SNS communities on the current network besides Facebook. Based on the above reasons, the author has concluded that the samples of this study were not truly representative. Therefore, future researchers might address a larger variety of communities to explore and further compare the differences between them.

### 5.4.2 The bias of the sample sources

In collecting the PTT samples, this study used several different communities, such as e-shopping, BuyTogether, WOW, Elephants, and C\_Chat. These included shopping, video games, ball games and animation. Adopting these different communities resulted in the final samples not being representative of the whole anonymous community. Therefore, future researchers might explore the same kind of community and compare the differences between the anonymous and non-anonymous versions.

### 5.4.3 Exploring other factors' moderating effects on the research model

This study explored the moderating effect of anonymity on the research model. Although the study results suggest that anonymity had no moderating effect on posting desire motivation and continuous posting intention, this study only explored the anonymity factor and not other influencing factors. In accordance with the study results, if anonymity did not influence the posting intention of members, future researchers might explore other factors as moderating variables in order to

determine the factors that do influence the posting intention of members so as to extend the subject.

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