Investigate the Influence and Moderators of the Embarrassment on the Continual Usage and Knowledge Sharing Intention in Virtual Communities

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Abstract

Embarrassment has been an important research issue in the domain of management. Previous studies indicated when embarrassment occurred between sales and customers, it could reduce the customers' intention to visit the store again. Virtual communities are also places for interaction between members; therefore, embarrassment could occurred as well. Goffman's dramaturgic theory can be perfectly applied to the settings of virtual communities. They both address the interaction facet between people. Dramaturgic theory can also elaborate the occurrence of embarrassment. Thus, this study aims to resolve the possible reasons inducing embarrassment by dramaturgic perspective, and investigate the influence and moderators of embarrassment on members' continual usage and knowledge sharing intention towards virtual communities. In addition, two sets of interference variables were derived based on virtual community characteristics, and their influence on the above-mentioned correlations was analyzed. The research results can be a good reference for virtual community operators and managers to help them understand those causes of embarrassment that have a negative impact on those community members' intentions, and to reflect on how they can reduce those causal factors by tweaking the design of community platforms.

1. Introduction

Embarrassment is a very important research topic within the field of management studies. Previous studies of Price et al. [1] and Wu and Mattila [2] pointed out that if embarrassment occurs during the interactions between salespersons and the customer, the customer will be less willing to return to their business. For example, if a customer is interested in trying on certain clothes, but the salesperson comments that the customer will not fit in the sizes they intend to try on, the customer will be less willing to come back. Grace [3] also indicated that embarrassment has a negative impact on customers' future consumption intentions and their recommendations. Goffman [4] proposed the dramaturgic theory to show that interactions among people in daily life resemble a drama. In addition, based on the causal factors of embarrassment, he pointed out that this discomfort is led by the failure of social encounters. When role segregation occurs, the person's performance can no longer satisfy the audience, which will lead to audience segregation. Under the multiple-self social system, embarrassment will occur.

With the development of the Internet, human interaction and knowledge sharing via the Web has gained a lot of popularity. Social networking in real-life has expanded to the realm of the virtual internet community, and the Internet plays a vital role in modern lives. Rheingold [5] defined the virtual community as a phenomenon of social aggregation, which occurs on the Internet when social aggregation gathers enough audience. Topical communications and discussions on the Internet can last for a prolonged period and there are interactive emotions, mutual language, common interests, and shared values and environment among the audience. Although communication is channeled through computers or digital devices, similar to real-life occasions, embarrassment may happen during the process of virtual interaction. For instance, embarrassment may occur when a person posts news on a discussion board that he/she learns from other community members and that has already been discussed weeks back and confirmed to be false. Another instance is when a person creates duplicated community accounts to support his/her own opinions but

their actions are spotted by community members based on the identical internet protocol address. When embarrassment occurs in the virtual community, will it reduce community members' intention to revisit or participate such as in the form of knowledge sharing?.

Our study discovered that Goffman's dramaturgical theory could be applied completely in the virtual community context and that the two concepts had very close correlations. For example, in a virtual community, a discussion thread is actually a drama. The members who participate in the discussion can be treated as actors who perform on the stage. The supporting roles are members who participate occasionally while the rest who remain silent are compared to the audience. The process of virtual community member interaction involves people expressing themselves, but these selves are not their 'real' selves but themselves in disguise. For example, in the audio equipment community, there are members who express their opinions on high-end audio equipment and give recommendations on various equipment combinations and by doing so, shape themselves in the role and image of audio equipment experts. Nevertheless, in real life these members may only own entry-level audio equipment and the recommendations they provide are merely based on the information they have learnt by attending audio exhibitions or concluded from their limited experience. These members purposely manage their self-images at the front of the stage so as to satisfy their need for attention, but behind the scenes they often seek help or advice from experts in real-life and then return to the front of the stage and deliver the lines in an authoritative tone. The anonymity the virtual community affords provides a "mask" for self-image management.

Therefore, this study attempts to establish the causal factors of embarrassment from the perspectives of dramaturgical theory, based on its explanations of embarrassment, and also attempts to investigate whether the various causal factors of embarrassment will lower members' continuance intentions in the virtual community and reduce their participation, either in discussions or in visiting frequency. More specifically, this study aims to investigate the impacts of the causal factors of embarrassment on the knowledge sharing and continuance intentions of the virtual community. The continuous use of information systems is also an important research topic in the field of information management. For operators of virtual communities, a decrease of knowledge sharing or revisit intentions among many community members will impact their survival. Hence, this study first investigates the causal factors of embarrassment that will affect members' participation intentions and then tries to provide some ideas for the design of community platform mechanisms and management policies from the perspective of system design, so as to lower the occurrence of the causal factors of embarrassment.

With regards to the characteristics of the virtual community, if we further evaluate possible interference of the causal factors of embarrassment on continuance and knowledge sharing intentions, the variable of the number of audience will be noticed firstly. Many studies such as the study of Tangney et al. [6] have pointed out that when there are capacity audiences present at the performance, the resulting feeling of embarrassment can only intensify than in the case where there is only one person or a small number in the audience. In general, community discussion threads will record the number of clicks that they have received, which means people are able to have an idea of how many people have seen the discussion thread. In addition, in contrast to real life, the incidence of embarrassment only occurs at that time, but responses of virtual communities are normally stored, leaving a digital footprint. The degree of embarrassment might be aggravated if the embarrassing incident keeps being viewed by successive audiences. The other possible interference factor derived from a virtual community's characteristics is the cognition of anonymity. A small number of specialized virtual communities (e.g. SCTNet, a virtual community for teachers and education professionals) require members to provide their real name identities, while the majority of virtual communities allow users to participate with any username. When embarrassment occurs, if the user believes his/her real-life identity cannot be recognized, the degree of embarrassment felt by that person could be lower.

Based on the above-mentioned background and motivations, the objectives of this study can be summarized as follows: (1) To find out the causal factors of embarrassment during virtual community interactions from the perspective of Goffman's dramaturgical theory. (2) To investigate the impact of various causal factors of embarrassment on continuance and knowledge sharing intentions. (3) To analyze the interference impact of audience numbers and the perception of anonymity on the causes of embarrassment and continuance and knowledge sharing intentions.

2. Literature Review

2.1. Virtual community from the perspective of dramaturgical theory

The dramaturgical theory focuses on the daily interaction among people, while the virtual community is a channel where people interact on the Internet. Therefore, it is suggested that the theory is highly applicable in the virtual community. Goffman [4] believed people's interaction in daily life is a drama, and people interact with others with a specifically constructed image. He studied the process of individuals making impressions as well as how other people respond to the impressions that they have. In the virtual community [7-8], members interact with other members with their username, and they shape their images with their public personal information or images as well as the manners they exhibit during the interaction process. These images could be deliberately designed and are different from their actual images in the real-world. Other members will interact in a fashion in response to these constructed images [9]. To illustrate this, using the audio equipment community as an example, one member claims that he/she owns high-end equipment from a well-known brand and he/she shares his/her user experience with the community, by which he/she gains other people's envy and compliments. Other members then interact with that member with the high-end player image constructed, such as by asking questions about the matching-up of the lower-end of that brand. In real life, that member may not own that high-end equipment, and it is his/her friend who actually owns that equipment and he/she only heard about the performance of that equipment when visiting his/her friend's place. However, that member posts his/her friend's user experience review onto the discussion board as though it were his/her own. That member will try to maintain the consistency of his/her image either by privately summarizing online information or asking for advice from real-life friends to defuse tricky questions that may follow, since fabricating false information will most likely be critiqued by other members, thus harming the image that he/she has carefully constructed.

2.2. Virtual community from the perspective of dramaturgical theory

Embarrassment is an emotional reaction induced by the occurrence of unpleasant social predications or social transgressions. The so-called unpleasant social predications have many definitions, including negative comments from other people or the damage of self-esteem, the appearance of unpleasant social critics, their own behaviors that do not meet their ideal expected properties, the failure in presenting consistent self-image, or the violations of other people's expectations. Panteli and Duncan [10] however considered embarrassment as a type of shame. David et al. [11] clearly defined embarrassment as a self-perceivable emotion, which has a blurry boundary with anxiety and shame. Embarrassment is an emotional reaction to sudden incidents that appear harmless and sometimes humorous. Once occurred, people will be pushed into panic, clumsiness, shame and misery. Chen [12] believed embarrassment is less intensive and long-lasting than guilt and humiliation, even though it can cause obvious and immediate unpleasantness. Embarrassment is different from basic emotions such as happy, sorrowful or angry. Behaviors that can be induced by embarrassment include apologize, explain, humor, remedy, escape, avoid, attack, etc.

David et al. [11] believed the dramaturgical theory can explain embarrassment. From the perspective of dramaturgical theory, Goffman [4] pointed out that embarrassment is caused by the failure of social encounters. When there are unfulfilled expectations (things tangible or otherwise that a person believes himself/herself "should have") and role segregation happens (which leads to audience segregation arising from the unsatisfactory performance of that person), embarrassment will occur under the multi-selves social system. Building on Goffman's theory, Metts and Cupach [13] and Schlenker et al. [14] defined embarrassment as a short-lived negative psychological response. David et al. [11] believed embarrassment is not induced from how people think of themselves or how other people think of them. Instead, embarrassment comes from expectations of the disruption of social performance. The dramaturgical theory hypothesizes that there is a specific playscript in every social environment where individuals have corresponding behaviors that they should display, and it also suggests that if a person senses that his/her behaviors are not following the play script, that person will feel embarrassment. Parrott and Smith [15] study demonstrated that embarrassment is induced purely from certain specific circumstances. It was suggested that the role of an individual is being damaged gradually when the person can no longer "continue" acting his/her social roles or representing

his/her identity and social status; in other words, when the consistency of the individual's identity is disrupted and cannot be recovered.

Higuchi and Fukada [16] proposed four causal factors of embarrassment based on the dramaturgical theory: inconsistency with self-image, apprehension of social evaluation, disruption of social interaction and loss of self-esteem. When the self-esteem of a person is under threat, and the inconsistency of self-image leads to other people's loss of trust in that person, embarrassment will occur. Moreover, when any party in the interaction shows inappropriate behaviors or intentions of disobeying the interaction rules and orders which both parties have agreed upon, this will damage the relationship and lead to loss of trust in the other party, thus disrupting interaction and causing embarrassment. The apprehension of social evaluation indicates that people come to experience the emotion of embarrassment because they are concerned about how other people will evaluate themselves with requirements which do not meet any specification. Other causal factors proposed by other scholars that may lead to embarrassment include potential loss of self-esteem, the fear of being the center of attention, failure in meeting personal standards, and falling short of others' expectations. Grace [3] pointed out several factors that can induce embarrassment: Criticism received from service providers, forgetfulness of the service provide or the customer, lack of knowledge/error, the customer himself/herself, awkward acts by the service provider or other people), the service provider's violation of the customer's privacy, external image appropriateness, and the influence of the surrounding environment, among others.

Although many researchers have proposed many causal factors for embarrassment, after evaluation, it was found that all the various causes fall into Higuchi and Fukada [16] four causal factors that trigger embarrassment, which are loss of self-esteem, inconsistency with self-image, disruption of social interaction and apprehension of social evaluation, respectively.

3. Method

The fundamental research structure of this study was based on the Grace [3] structure of critical incidents of embarrassment, namely the causal factors, duration and consequences of embarrassment. After the summarization of the causal factors of embarrassment, it is observed that the causal factors of embarrassment proposed by many scholars can be generalized in Higuchi and Fukada [16] four causal factors of embarrassment. In addition, it can be justified from the perspective of dramaturgical theory. Therefore, we adopted these four causal factors of embarrassment to investigate its influence. Based on the outcomes of embarrassment indicated by Grace [3], consequences of embarrassment include the dramatic decrease of continuous consumption and continuance consumption intention. David et al. [11] believed embarrassment encourages people to avoid situations where embarrassment may reoccur. In addition, Goffman [4] believed that embarrassment occurs during unexpected social interactions that result in loss, which will lower people's intention in participating in that social community. Cheung and Lee [17] believed members' continuance participation includes continuance and recommendation intention. Our study believes that recommendation is also a behavior for knowledge sharing. From the perspective of the possible consequences induced by the embarrassing feeling, it would be more appropriate for our study to replace the recommendation intention with the knowledge sharing intention, which also corresponds to the four measures of continuance participating behavior of the virtual community proposed by Casaló et al. [18]. These include the motivations for interacting with other community members, the efforts in promoting the virtual community, the contributions in sharing useful content and information for helping other community members, and the responses to other loyal members' inputs.

In terms of interference variables, our study considered that it is necessary to take account of the virtual community's characteristics. One of the most outstanding features of the virtual community is that members can participate in discussions using an anonymous identity. Some communities do not require members to provide their personal information, while in others it is mandatory to provide detailed personal information for verification. Some have adopted the real-name registration system, which are normally professional virtual communities or communities for specific organizations. If the person senses other members cannot infer his/her real-life self-identity from available public information, the level of embarrassment can be less intense. Furthermore, many studies have pointed out

audience size can influence the intensity of embarrassment. In this study we believe this also applies to the virtual community. The slight difference in embarrassment between virtual community and real life is that in real life embarrassment normally only occurs once. While different from the specific and short-lived properties of embarrassment as pointed out by Dong et al., [19], embarrassment in the virtual community can be experienced by people viewing a stored discussion thread long after it has been frozen in time. Since discussion threads generally record the total number of clicks (representing the number of views), a high number of views will intensify feelings of embarrassment. Based on the above hypotheses, our research model in this study is shown in Figure 1.
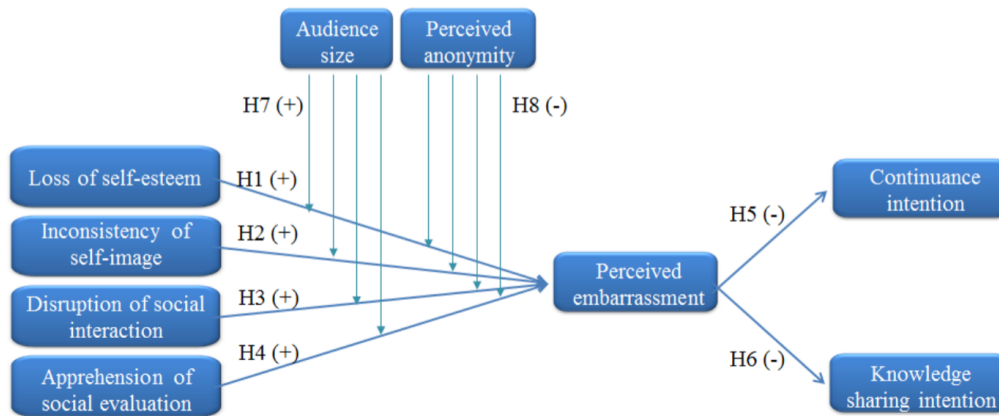

Fig. 1. The research model of this study

3.1. Hypotheses

According to the four causes of embarrassment as well as the main feature of virtual community anonymity and audience size, this study further investigated whether these two interference variables can increase or reduce the degree of embarrassment perceived by the subjects, as well as their impacts on the continuance and knowledge sharing intentions.

3.1.1. Loss of self-esteem

Goffman [4] pointed out that embarrassment will occur when a person is deprived of self-esteem because the person can sense his/her self-esteem being deprived in other people's eyes. Goffman also believed that individuals care about maintaining their self-esteem in social interaction. When the individual's self-esteem is under threat, embarrassment will occur. Dong et al., [19] pointed out that embarrassment is specific and short-lived; however it indicates the sharp loss of self-esteem. Since the loss of self-esteem is always related to a person's continuous social situations, it can be said that embarrassment can reflect the loss of situational self-esteem. Sabini et al. [20] stated that numerous research results have demonstrated that the loss of self-esteem is the cause of embarrassment. Dong et al., [19] and Mao et al., [21] believed that the loss of self-esteem in other people's eyes is enough to result in embarrassment. The study of Higuchi and Fukada [16] demonstrated that this causal factor of embarrassment is one of the most outstanding reasons in public occasions, for which the virtual community is an example.

In the virtual community, it is believed that loss of self-esteem can lead to embarrassment during interactions among community members. For instance, if a person shares information in a discussion thread, but gets criticized and abused for it. Situations like these will make people feel their self-esteem is being damaged and attacked. Similar to what Dong et al., [19] and Mao et al., [21] have stated, the loss of self-esteem in other people's eyes is enough to trigger feelings of embarrassment. Based on the above studies, it was concluded in this paper that the loss of self-esteem has a positive impact on the perception of the degree of embarrassment.

H1. In virtual communities, loss of self-esteem has a positive impact on perceived embarrassment.

3.1.2. Inconsistency of self-image

Inconsistency of self-image mainly occurs when other people have inconsistent opinions towards one individual's self-image. Goffman [4] argued that inconsistent role-playing will induce other people's loss of trust in that

individual, thus leading to embarrassment. Apsler [22] believed embarrassment occurs because the embarrassed person is concerned about his/her image in other people's minds. Therefore, the embarrassed person will behave differently to people who know the details about a compromising incident so as to repair his/her damaged self-image. That being said, the person only attempts to repair his/her image in the minds of people who have knowledge of the details, not those who are unaware. This is because the embarrassed person believes that his/her self-esteem is not damaged in the minds of people who are not aware of the details, so there is no need to correct their behaviors for them. Semin and Manstead [23] believed that embarrassment comes from the inconsistent impression of other people's perceived self-image and negative images, demonstrating the difference between his/her original identity and social status and that of reality. Research results of Higuchi and Fukada [16] also demonstrated that the inconsistency of self-image is one of the main sources of public embarrassment. The study of Parrott et al., [24] on the occurrence of embarrassment suggests the disruption of the individual's identity consistency. Embarrassment will occur when the social interaction capability and the consistency of a new image cannot be created. The occurrence of embarrassment often comes with confusion and clumsiness, suggesting that the role of the individual is being harmed due to the consequence of lack of balance or the lack of appropriate behavior manners.

In virtual communities, during the interaction among members, our study believes the inconsistency of self-image can also induce embarrassment. For example, when a well-respected experienced member asks a basic question that even a beginner can answer, embarrassment can occur because it makes other people think this is different from their original image. Hence, we hypothesized that the inconsistency of self-image has a positive impact on the perception of the degree of embarrassment.

H2. In virtual communities, inconsistency of self-image has a positive impact on perceived embarrassment.

3.1.3. Disruption of social interaction

Goffman [4] believed the basic model of interaction is that both parties hold their own situation definitions and hypotheses, and both parties agree with the rules and regulations of the interaction. When any part displays inappropriate behaviors or unwillingness to follow the interaction rules and regulations which both parties have agreed upon, they lose trust in the other party, thus leading to embarrassment and the disruption of interaction. Therefore, embarrassment can be properly avoided if the continuance of interaction can be maintained, which requires the ability in learning, following regulations, and being flexible. David et al. [11] mentioned that unless there is an overt disruption of social performance or anticipation of such a disruption, embarrassment is deemed to occur. The study of Newman [25] mentioned that four to seven seconds of disruption in normal conversations will let the other part or both parts feel uncomfortable and have uneasy feelings, thus causing embarrassment. The study of Higuchi and Fukada [16] demonstrated that the disruption of social interaction is one of the major sources of embarrassment on public occasions.

In virtual communities, during the interaction among members, our study believes that embarrassment can be triggered by disruption of social interaction. For example, in virtual communities, a person asks for other people's advice, but gets ignored; or one person replies multiple times to a post, but nobody responds. Both scenarios will lead to embarrassment; hence we hypothesize that the disruption of social interaction has a positive impact on the perceived embarrassment.

H3. In virtual communities, disruption of social interaction has a positive impact on perceived embarrassment.

3.1.4. Apprehension of social evaluation

Sabini et al., [20] considered embarrassment as a type of social failing, which is related to other people's social evaluations because embarrassment is a phenomenon that occurs in the social context. In brief, individuals care about how other people evaluate them socially. Similar to the study of Schlenker et al. [14], they pointed out that one necessary prerequisite for the occurrence of embarrassment is that the individual must care about social evaluations from an audience. Edelmann [26] believed that people experience embarrassment because they care about how other people evaluate themselves when they use inappropriate requirements. Dong et al., [19] believed that as long as social evaluation exists, no matter if the evaluation is positive or negative, the person who is the center of focus may

feel embarrassed. As long as the individual cares about other people's opinions, and is concerned about how other people evaluate him/her, embarrassment may occur. In the study of Parrott and Smith [15], it was believed that embarrassment is induced when people are concerned about others' opinions reflecting on themselves. When a person can no longer continue his/her social role or represent his/her identity and social status, embarrassment will be induced. Dahl et al [27] pointed out in their research that the effect of embarrassment can be real, or it can be imaginary. People feel embarrassed if they are concerned about other people's thoughts. Therefore, people will feel being evaluated no matter whether this is real or imaginary.

In virtual communities, it is this study's belief that the apprehension of social evaluation can lead to embarrassment during member interaction. For example, in a virtual community, a person accidentally posts an article with foolish content or posts false information incorrectly on the discussion board, resulting in embarrassment because he/she worries how other users will perceive him/her because of this. Hence we hypothesized that the apprehension of social evaluation has a positive impact on the perceived embarrassment.

H4. In a virtual community, apprehension of social evaluation has a positive impact on the perceived embarrassment.

3.1.5. Continuance intention

Goffman [4] believed that embarrassment occurs during unexpected social interactions that result in loss, which will lower people's intentions in participating in that social community. The study of Wu and Mattila [2] pointed out that when the level of embarrassment is very high, the effect of "cutting off" will be induced. Embarrassed customers will spread their negative reviews to their friends and families thus cutting off their intention to re-visit. Price et al. [1] stated that the emotional reaction of customers is one component of service experience, which will influence their future behaviors in return. Therefore, embarrassment is an important factor influencing customers' following behaviors. David et al. [11] believed that embarrassment may control and regulate a large number of social behaviors, and in order to avoid future embarrassment, the things we do not do are more important than the things we do. Semin and Manstead [23] stated that people overestimated the severity of the negative social consequences of their inappropriate behaviors. Consequently, they tend to escape from temporary, short-term embarrassment by betting on their long-term welfare in the future. The above-mentioned studies demonstrated that embarrassment is something that people would like to touch, so as to avoid its re-occurrence. The study of Grace [3] summarized the consequences of embarrassment, namely the re-visit intention and word-of-mouth impact, among which the most common consequence is the immediate departure, unwillingness to re-visit and resistance in consumption. Close to 70 percent of customers would try to avoid re-visit and more than half would generate negative reviews. Grace [3] suggested that customers with feelings of embarrassment have strong intentions of running away from these uncomfortable situations and thus are less likely to go back to those service providers. In her conclusions, she pointed out that the consequences of embarrassment are the dramatic decrease in re-consumption rate, decrease in continuance consumption intention and increase in negative reviews.

In virtual communities, the more the user perceives embarrassment, the less frequently he/she will re-visit the community. In some cases, users will never return to the community or will start visiting other similar communities. Hence, in this study we conclude that the more the user perceives embarrassment, the lower the continuance intention will be.

H5. In virtual communities, the more the user perceives embarrassment, the lower the continuance intention will be.

3.1.6. Knowledge sharing intention

Knowledge sharing is one form of knowledge transfer via certain information dissemination carriers, and it is also the interactive process between two parties where the knowledge receptor illustrates the new knowledge based on his/her previous knowledge. In addition, it was pointed out that knowledge sharing can take place in a different space and time. New knowledge is created during the process of knowledge sharing; namely, while knowledge is being shared or used, new knowledge is also being created. By sharing knowledge, both knowledge-sharing parties will gain knowledge and experience at a linear rate. If the knowledge continues to be shared with other people and the question gets discussed further in-depth, knowledge will be obtained exponentially. According to perspectives in the theory of

reasoned action (TRA) as proposed by Ajzen and Fishbein [28], the factor that can predict behaviors most precisely is people's behavior intentions, which are influenced by individual behavior and altitude. Therefore, the key factor of knowledge sharing behavior is the knowledge sharing intention.

In virtual communities, after the occurrence of embarrassment, the more the user perceives embarrassment, the lower their discussion participation frequency, leading to less knowledge sharing. Hence, the following hypothesis can be derived:

H6. In virtual communities, the more the user perceives embarrassment, the lower the knowledge sharing intention will be.

3.1.7. Audience size

Audience plays an indispensable role when embarrassment occurs and plays an important role in determining whether embarrassment can be perceived completely. Parrott and Smith [15] and Tangney et al. [6] mentioned that the level of embarrassment will be more intense when there are large audiences. Lizardo and Collett [29] pointed out that people always want to present the best of themselves when there are many people present. The study of Dahl et al. [27] demonstrated that if there are other people present, the customer will experience a more intense feeling of embarrassment, which proves that audience size impacts the intensity of embarrassment. Tangney et al. [6] pointed out that when embarrassment occurs, the size of the audience will intensify feelings of shame and regret. The study of Dahl et al. [6] pointed out that when customers are purchasing, the presence of other people will intensify their level of embarrassment.

In virtual communities, since almost all platforms record the clicking times of every discussion thread, the number of people who have viewed certain discussion threads can be reflected directly. From the perspective of dramaturgical theory, popular dramas can attract more audiences. Similarly, in virtual communities some discussion threads are popular topics, which can attract much audience participation or gain their continuous attention. When an embarrassing situation occurs, the user can sense the number of people who have viewed the subject of their embarrassment by looking at the clicking numbers of the discussion thread as well as by judging the popularity of discussion participation. If the person senses that many people have seen the discussion thread, the degree of embarrassment may be aggravated. In contrast, if the person senses that the offending discussion thread is not popular, the degree of embarrassment will be reduced. It is necessary to mention that embarrassing situations in real life normally fade away eventually. In a virtual community, unless that discussion thread or the comments are deleted, the records stay permanently, thus intensifying the person's embarrassment. Therefore, this study hypothesized that audience size aggravates the perceived degree of embarrassment induced by the causal factors of embarrassment.

H7a. In virtual communities, audience size aggravates the perceived degree of embarrassment induced by the loss of self-esteem.

H7b. In virtual communities, audience size aggravates the perceived degree of embarrassment induced by the inconsistency of self-image.

H7c. In virtual communities, audience size aggravates the perceived degree of embarrassment induced by the disruption of social interaction.

H7d. In virtual communities, audience size aggravates the perceived degree of embarrassment induced by the apprehension of social evaluation.

3.1.8. Perceived anonymity

Anonymity refers to undisclosed personal information or background. In other words, it refers to hiding a person's original identity, thus concealing their real characteristics and identity. The traits of anonymity can let internet users enjoy disruption and guilt-free interactions, and they can enjoy their right of hiding their self-identities. Along with the development of the Internet, internet anonymity is more and more common. Users can choose whether or not to make their specific information open to the public so as to reduce the possibility of getting disrupted. Anonymity lowers the public pressure on the Internet and protects an individual's privacy, creating room for more speech and

comments. It can also enhance the communication qualifications of the users. Sweeney[30] also believed that anonymity provides a communication platform which can protect personal identity. After the dissemination of information, the user does not need to worry about incoming social evaluations, negative critiques or vengeful behaviors. In virtual space, anonymity can help internet users avoid real life social ethics, and responsibility for posting inappropriate articles, which also indirectly encourages the occurrence of extreme and negative remarks. Beside the positive effect of anonymity in promoting internet communication, the abusive usage of anonymity can also bring negative impacts such as avoiding responsibility charges. Negative behaviors induced by anonymity include rudely disrupting online forums or chat rooms, making false comments, pretending to be other people, purposely sabotaging computer systems, as well as other cybercrimes.

In virtual communities, when embarrassment occurs, if the litigant thinks the community platform has well-protected anonymity and other community members cannot identify his/her real self from the username or personal information, the degree of embarrassment will be lower thereafter. Otherwise, if the professional virtual community adopts a real-name system, it will make the user feel that his/her real live image can be identified by other community members with nowhere to escape, thus intensifying embarrassing feelings. Hence this paper hypothesizes that the cognition of anonymity mitigates the perceived degree of embarrassment.

H8a. In virtual communities, perceived anonymity mitigates the perceived degree of embarrassment induced by the loss of self-esteem.

H8b. In virtual communities, perceived anonymity mitigates the perceived degree of embarrassment induced by the inconsistency of self-image.

H8c. In virtual communities, perceived anonymity mitigates the perceived degree of embarrassment induced by the disruption of social interaction.

H8d. In virtual communities, perceived anonymity mitigates the perceived degree of embarrassment induced by the apprehension of social evaluation.

3.2. Research design

3.2.1. Survey design

Based on the development of the above-mentioned questions for evaluation, since our study focuses on the investigation of virtual communities and the low cost of online survey development and fast response rate with no geographic and time limitations, we adopted the method of online survey for this research project. Before the distribution of the survey, in order to ensure the questions' meaning and the statements' clarity and readability, the survey of this study was pre-tested and revised by 25 postgraduates majoring in Information Systems. In the meantime, we also sought advice from three social community researchers and one social community operator so as to enhance the content effectiveness of this questionnaire. This survey was distributed to several large national virtual communities of various types in the hope of drawing stronger and more comprehensive conclusions by increasing sample diversity.

3.2.2. Data collection procedure design

The online survey used in this study was developed and constructed by ourselves using PHP (ver. 5.2.3) programming language, combined with MYSQL (ver. 5.0.45) back-end database and Apache HTTP Server (ver. 2.2.4). The back-end of the survey was controlled by using the Limesurvey (ver.1.81) survey management system, which has powerful functions in conveniently managing back-end information databases, easily identifying repetitive respondents and screening out invalid survey responses, so as to increase the accuracy of the sampling source. In the survey, most answers could be selected using the mouse, which could shorten the survey duration for the overall user interface. After the survey responses were submitted, we selected the format of the export file and the survey responses, which could be transformed into preset values automatically. For example, the response of "strongly agree" would be converted to the numeric scale of 7 automatically for data analysis. Focused on the investigation of continuance use intention of populations who participate in virtual community activities, the sampling target of this

study was expected to be mainly discussion forum users. It was estimated that we could receive 700 survey responses. Participants were recruited on a voluntary basis so as to investigate whether a spontaneous participant will change his/her continuance participation intention towards the virtual community after the incidence of embarrassment. We were able to conduct both the conventional multivariable analysis and the analysis of interference variables with the assistance of SPSS 21.0 and PLS (Partial Least Square, PLS) analysis.

4. Discussion and Conclusion

4.1. Estimated research results and contribution

Marketing research has indicated that the customer would have lower intention to revisit if customers experienced feelings of embarrassment during their interaction with salespersons. The same applies in virtual communities, but will it also lower the community members' continuance intention in this context? This is the research motivation of our study. We found that Goffman's dramaturgical theory, which described the causal factors of embarrassment, could be applied to the realm of virtual community, which prompted this study to investigate these effects on the continuance participation intention of community members from the dramaturgical perspective. In this study, the continuance intention of knowledge sharing and for use was further categorized. Then, based on the features of virtual community platforms, we derived two possible interference variables namely the cognition of anonymity and audience size. Lastly, it was proposed to collect questionnaires using a survey research methodology before the proposed hypotheses of the causal factors of embarrassment and the interference factors with multivariable analysis were validated. The research results can be a reference for community operators for the operation of their communities. After knowing which causal factor will lower the community members' knowledge sharing and continuance use intention, community operators can rethink how to reduce the occurrence of embarrassment from community platform mechanisms or forum regulations. For example, if the research results demonstrate that loss of self-esteem arising from inappropriate opinions is the main factor driving members' embarrassment, the articles can be locked or the replying function can be disabled thus preventing further discussion. In addition, notices can be posted discouraging users from bringing personal emotions into their comments. Regarding the research result that shows the disruption of social interaction is another important causal factor for inducing embarrassment, there is another example. If the posted article elicits no reply or the response gains no further replies for discussion, people can set up handling mechanisms which can inform the board master, the poster or experienced members and invite them to share or participate in the discussion so as to avoid embarrassment. Hence, if people are able to carry out prevention or handling mechanisms, the frequency of the occurrence of embarrassment can be reduced as well as reducing the lowering of the continuance use intention to maintain the harmonious operation of the community.

4.2. Limitations and future research work

Most questions in our survey are questions focused on subjective perceptions. In order to assess the degree of embarrassment, we had to collect the responses by asking questions in hypothetical scenarios, which might differ from real-life situations. In addition, this research is cross-sectional. If we carried out longitudinal research, different research results might be obtained. With regards to future research directions, we can investigate which methods for avoiding the factors of embarrassment that lowers the users' continuance intention have better effects. In this study, we focused on the study of the virtual community. In future, there may be more findings if the research dimension can be extended to the social media network.

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