

## **The influence of mere virtual presence with product experience and social virtual product experience on brand attitude and purchase intention: Conformity and social ties as moderators**

**單純虛擬在場產品經驗與社交虛擬產品經驗對品牌態度與購買意圖之影響－以從眾行為與社會連結為干擾變數**

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**Abstract:** The purpose of the present study is to expand on the findings of previous studies by comparing the brand community effect of mere virtual presence with product experience (MVPE) and social virtual product experience (SVPE). Moreover, by employing conformity and social ties, the present study aimed to analyze various virtual product experience types (MVPE, SVPE) to determine the differences in brand community effect. This study employed a factorial online experimental design to test these hypotheses on Facebook. It conducted a 3 (MVPE, gift-giving SVPE-C2C, exchange SVPE-B2C) × 2 (conformity: high/low) × 2 (social ties: strong ties/weak ties). The results provide evidence that different virtual product experience types will determine the differences in brand community effect. The results also show indirect effects for the two moderators between virtual product experience types (MVPE, SVPE) and brand community effect. In addition, regardless of whether the social ties are high or low, with the conformity of interactive interference, SVPE brand community effects are better than those of MVPE. Although the importance of these virtual experiences is continuously increasing, there is still a lack of studies

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that empirically analyze the effects on consumer behavior from the combination of machine interaction and interpersonal interaction of VPEs.

**Keywords:** Mere virtual presence with product experience, social virtual product experience, conformity, social ties.

**摘要：**本研究目的是比較單純虛擬在場產品經驗 (mere virtual presence with product experience, MVPE) 與社交虛擬產品經驗 (social virtual product experience, SVPE) 在線上品牌社群效果的差異影響，並以從眾行為和社會連結為干擾變數，評估對各種虛擬產品體驗類型 (MVPE、SVPE) 之間的線上品牌社群效果。本研究實驗設計採 3 (MVPE、給予式 SVPE-C2C、交換式 SVPE-B2C) × 2 (從眾行為：高/低) × 2 (社會連結：強連結/弱連結) 在 Facebook 上的研究假設。研究結果顯示，不同的虛擬產品體驗類型對品牌社群效果具有差異。另外，從眾行為和社會連結在虛擬產品體驗類型 (MVPE、SVPE) 和品牌社群效果之間具有干擾效果。不論社會連結為高或低，在搭配從眾行為的交互干擾作用下，SVPE 的品牌社群效果皆優於 MVPE。雖然虛擬產品經驗的重要性不斷地增加，但在研究上仍然缺乏從人機互動和人際互動相結合的虛擬產品經驗對消費者行為影響的研究。

**關鍵詞：**單純虛擬在場產品經驗、社交虛擬產品經驗、從眾行為、社會連結

## 1. Introduction

The constant evolution of digital technology has given rise to a virtual world from which online social networking websites originate. Through Facebook, Twitter, YouTube, or blogs, users can exchange and retrieve information; they create, share, and disseminate information while also receiving it. As social networking sites improve and the number of users grows, interpersonal communication using these online platforms has expanded and diversified. For example, Facebook allows users to network with each other, create fan pages, and form groups for online shopping. Wei *et al.* (2015) results showed that social needs, information needs, human–message interaction, and human–human interaction are crucial factors that affect the ‘stickiness’ of users continue to use social networking sites. Thus, business owners can establish

brand communities on social media platforms by providing information or services that may interest their target market, engaging consumers in a timely manner to enhance brand loyalty and gain a better understanding of their preferences (Kaplan and Haenlein, 2010). Moreover, studies on the influence of brand fan pages on user motivation to participate on the pages have suggested that online service usage behavior can affect consumer–brand relationships (Jahn and Kunz, 2012). Facebook fan pages allow enterprises to interact with community members and promote activities designed to attract the attention of fans (Ruiz-Mafe *et al.*, 2014). Social media can boost the sales of corporate brands because interacting with consumers online may exert positive effects on consumer brand evaluations and purchase intentions (Chung *et al.*, 2015; Stephen and Galak, 2012)

According to academic studies on the relationship between online brand networks and consumer behaviors, brand networks enable network members to share some behaviors or topics; network members can interact and become connected in these brand networks; the interpersonal relationships among network members would also influence purchase decisions (Cha, 2009; Lee, 2017). According to Keng *et al.* (2011), the degree of interaction and intimacy is the standard by which interpersonal virtual experiences are classified, where higher degrees of interaction and intimacy will form social interpersonal experiences. Therefore, online shopping is not merely a behavior of purchasing products; meaning there is interpersonal interaction in the process. Interpersonal interaction, however, influences a person's feeling about a product (Barlow *et al.*, 2004; Floyd and Wooldridge, 1999). On social networks and platforms, consumers intentionally or unintentionally discuss certain products, and then, develop a new kind of virtual product experience, which is the social virtual product experience (SVPE). Belk (2010) probed into interpersonal interactions and summarized three motivations for interpersonal interactions in society: "Sharing", "Gift-Giving", and "Exchange", which can be used to classify sharing and interaction.

Argo *et al.* (2005) the social effect in the consumption environment occurs during interactions, as well as in the zero-interaction context. Gefen and Straub (2004) added the product factor, and pointed out that the perception of mere virtual presence on a webpage could win more trust from consumers, which

would strengthen consumers' purchase intention. According to the study by Naylor *et al.* (2012), when the supporters of other brands merely share brand experience in a passive manner, and present it in online brand networks in the form of mere virtual presence (MVP), it would have positive effect on the brand evaluation and purchase tendency of the target subjects. Hence, this study intends to extend the research findings of Naylor *et al.* (2012); with the interpersonal social effect environment and virtual product experience as the theoretical foundation, this study defines the mere virtual presence with product experience (MVPE) as a virtual product experience based on the mental demand for social contact and social effect, which is accumulated by consumers who remain in the mere virtual presence of the network members of other brands, and thus, receive the information about products or brands from others. When the members of brand networks only experience mere virtual presence in a passive manner, the participants still feel the social effect of online brand networks on their brand attitudes and purchase intentions.

Aside from the exploration into the virtual product experience, social influence can lead to people to follow the discussion of the majority of people, follow the other customers consumption, resulting in external consumer conformity in terms of compliance, identification, and internalization. Conformity plays a vital role in social media in the social influence of online brand networks. Lee (2006) experiment results that group identification and extremity of the perceived group norm mediated the effects of depersonalization on conformity. Conformity is the group effect generated by people who consider others' experiences in using a product or service to reduce their uncertainty about the product or service. The rise of the Internet has not only promoted network-based communication, but also increased conformity. If a product wins the favor of many people or is widely shared, people would tend to believe that the product is good, and thus, have the purchase intention. Conformity was proposed by social psychologist Asch (1951), who believed that conformity took shape because a person wanted to become adapted to society. Allen (1965) argued that conformity was a reflection of social effect, and that the source of such effect was the effect of other group members on individuals. Lascu and Zinkhan (1999) summarized the views of various scholars from the perspective of marketing application, and believed that conformity was "When a person

faces the purchase behavior, comments, and intentions of the reference group, he/she changes his/her product comment, purchase intention, and purchase behavior to meet the expectation of the reference group". Malatesta (2001) conducted an experiment similar to that of Asch on the Internet, and also found that people would still change their mind and behavior under the pressure of groups, even though the Internet featured anonymity. As interpersonal connections become increasingly close and diverse, it has become impossible to neglect the effects of conformity. This reflects conformity, a type of social influence involving changes in a person's beliefs or behavior in order to fit in with a group.

The members of virtual communities can share interests, objectives, and needs in the network, and such behaviors have become the link among these members. People use virtual networks to search information or knowledge, as well as seek friendship, support, and a sense of belonging. Hence, social connection is regarded as an important index for decision-making, and it symbolizes the extent of interpersonal relationships, the time they invest in each other, and the degree of interaction (Chai and Kim, 2012; Chiu *et al.*, 2006). When people have strong of social ties, they had a wide range of people and a large number of interpersonal networks, the information to his hands will let a large number of people access to this message (Gladwell, 2006). Brown and Reingen (1987) introduced the concept of social networks into communication research and defined tie strength as the degree to which the information sender and receiver are familiar with each other. Their analysis used the frequency of social contact and the importance attached to the relationship between the information sender and receiver to categorize connection strength into "strong ties" and "weak ties". Adams (2011) expressed that strong ties represent the people with whom a person spends the most time, whereas weak ties are mere acquaintances. Consumers trust and tend to base their purchase decisions on the experiences of those with whom they have the strongest ties. Accordingly, the use of social networking sites has a strong influence on the expansion of individuals' interpersonal relationships and the connectivity of their social networks. According to Wang and Chang (2013), ties can be divided into weak and strong ties. If a relationship is defined as a weak tie, it means that there is little interaction and unsmooth information communication between two people;

if the interaction is continual and both are close friends, the relationship is defined as a strong one. Therefore, this study defines social ties, as follows: if consumers can maintain active interactions with the members of virtual networks and establish friendships with them, the frequency of communication based on the recommendations of products among them will increase. The strong ties as a relative or close friend of a brand community member who has a strong social influence on the member, and a weak tie as a virtually present acquaintance of a brand community member.

Virtual product experience (VPE) refers to consumers' impressions of products when they communicate with each other and become acquainted with products through computers (Klein, 1998). According to the studies on virtual product experience (Keng *et al.*, 2011; Keng *et al.*, 2012; Keng and Liu, 2013; Keng *et al.*, 2015), virtual product experience is the impression that consumers have of products when they interact with other via computers, and become acquainted with products. Compared with the past research, the main purpose of this study: First, this study intends to extend the research findings of Belk (2010) and Naylor *et al.* (2012); compared the effects of the MVPE and SVPE of OBC members on their brand attitude and purchase behaviors. Second, this study also explored the moderating roles of conformity and social ties, to investigate whether MVPE and SVPE scenarios combined with different conformity and social ties produce different brand attitude and purchase behaviors. Addressing the literature gap and offering suggestions for the management of OBCs.

## **2. Literature review and hypotheses**

### **2.1 Virtual product experience, VPE**

According to Li *et al.* (2001), the interaction between consumers and environment can be divided into direct product experience, indirect product experience, and virtual product experience. Virtual product experience can create the sense of telepresence, meaning consumers can have virtual experiences by experiencing the 3D environment on a computer. Virtual product experience refers to the consumers' feelings on the Internet, as well as their experience of interacting with products through electronic media. According to the study by

Klein (1998), virtual product experience can effectively enhance consumers' feeling about products, which enables consumers to evaluate products from diverse perspectives, in order to create effects equal to direct experience; meanwhile, converting product experience into product search can reduce the risk consumers would face in the purchase of products. Dahan and Srinivasan (2000) conducted a test on the effects of virtual and real products on attitude towards products, and found that both had nearly the same effects. The test also showed that the virtual product experience did influence consumers' evaluation of products. Therefore, websites equipped with virtual product experience can strengthen consumers' learning ability, which will influence brand attitude towards products. Enterprises can influence consumers' selection and purchase of products through websites by adopting 3D visualization technologies to improve the virtual product experience; moreover, they can enhance advertising persuasion and purchase intention (Daugherty *et al.*, 2008). Keng *et al.* (2011) believed that different virtual product experiences would generate different senses of virtual networks during highly virtual interactions. If online brand networks only provide simple information about products, but do not share the experiences of other, consumers would have a weak sense of brand network; if the provided information includes relevant experiences about products, there will be a strong sense of virtual network, even if consumers cannot see or touch the products.

In this study, consumers' virtual product experience means that consumers become acquainted with products through a computer interface, which influences the relationship between consumers and brands. Virtual product experience can be divided into mechanical and interpersonal virtual product experiences (Hoffman and Novak, 1996). On social websites, common virtual product experiences include MVPE and SVPE. In both cases, consumers become acquainted with products through interpersonal interactions on a computer. In the process of exchanging ideas and establishing a bilateral relationship, the virtual product experience will influence the relationship between consumers and brands forms.

## **2.2 Mere virtual presence with product experience, MVPE**

The mere presence theory was first proposed by Zajonc (1965), who

believed that the presence of others alone could create the social facilitation effect. According to Argo *et al.* (2005), the social effects in a consumption environment appear in a context with or without interaction. Gefen and Straub (2004) applied the concept to virtual space, and found that adding the perception of mere virtual presence to webpages could win more trust from consumers, which will enhance consumers' purchase intention. Naylor, Lamberton, and West (2012) found that if the members of a brand network only experience the mere virtual presence in a passive manner, participants will still felt the social effects of the online brand network, which will influence their brand evaluation and purchase intention. Naylor *et al.* (2012) argued that mere virtual presence referred to the phenomenon that members only appeared on the same virtual social platform, but showed few actual communication behaviors. The study also demonstrated that consumers would infer others' preferences according to wording, and that if consumers saw others support a certain brand, they would have stronger brand affinity, which would promote consumers' brand evaluation and purchase intention. Schaefer *et al.* (2015) investigated the influence of mere virtual presence, as well as the interactive virtual presence of positive and negative valence, on complainant satisfaction and purchase intentions, and analyzed the roles of the expertise of those who were virtually present.

According to the findings of the above studies, network features of immediacy, interaction, anonymity, and telepresence have gradually substituted face-to-face interpersonal communication. Telepresence presence means that a person can still have the sense of presence even if he/she is actually absent; it enables him/her to feel the atmosphere of mere virtual presence. This study intends to extend the research achievements of Naylor *et al.* (2012), and establishes the mere virtual presence with products (MVPE), which is theoretically based on the interpersonal social effect environment and the virtual product experience. The definition of MVPE is, as follows: when consumers are in a mere virtual presence environment of brand network members, they receive the product or brand information from others, meaning they become acquainted with products even if there is no public interaction among the members or the members do not know each other. It is a virtual product experience based on the mental demands for social contact and social effects.



### **2.3 Social virtual product experience, SVPE**

The greatest difference between social shopping websites and traditional shopping websites is the concept of social networking and interpersonal interactions (Tse and Chan, 2004). Contemporary social network websites, including Facebook and Twitter, have collected online social network concepts, and consumers can evaluate various brands through such social network websites (Pai and Tsai, 2011). Meanwhile, enterprises can establish exclusive fan websites for their brands, and have direct interaction with consumers on such social websites. On social networks and platforms, consumers intentionally or unintentionally discuss certain products, and then, develop a new kind of virtual product experience, which is the SVPE.

Belk (2010) studied interpersonal relationships, analyzed consumption elements and motives for socializing, and categorized social experience into three types: (1) Sharing experience refers to the actions and processes of distributing personal objects or information to others.; (2) Gift-giving experience involves gifting to show gratitude for others' politeness or respect, meaning a process whereby social relationships are established due to the obligatory function of gift giving and receiving; and (3) Exchange experience refers to the reproduction of ownership over objects.

Kolm (2000) and Skageby (2010) exhibited the implicit reciprocal components of the giving experience, in which the motivation for giving is based on emotional connections, thus, the giving experience is classified as indirect reciprocity. In contrast, the exchange experience emphasizes the immediate exchange between parties, and the motivation for this giving is based on economic benefit, thus, the exchange experience is classified as direct reciprocity.

This study defines SVPE as a consumer product experience that is created on social shopping websites and used it as a major variable of social shopping behavior. Gift-giving SVPE-C2C (customer-to-customer) is defined as a mutually beneficial social relationship in which consumers share product information with each other. Companies can provide information and opinions in their OBCs from which the community members can benefit, or they can respond to and share members' favourable feedback. Exchange SVPE-B2C

(business-to-customer) is defined as a model of business–consumer interaction in which a company asks its OBC members to participate in a given substantive act of exchange (e.g., receiving discounts in return for sharing postings about promotional content).

## **2.4 Conformity**

Conformity has been extensively discussed in social psychology. It is a type of self-expression undertaken when a person fails to fit in with a group (Allen, 1965). Conformity involves conforming to social norms to please others, seek approval, and avoid being criticized or rejected (Simonson and Nowlis, 2000). Therefore, social psychology studies on conformity are devoted predominantly to examining how a person aligns his or her beliefs or behaviors in line with those of a group in response to group pressure (Kiesler and Kiesler, 1969). Attention to Social Comparison (ATSCI) is a dimension of the self-monitoring theory, as proposed by Snyder in 1974, and is the result of public self-consciousness and strong social anxiety. Several scholars (Lennox and Wolf, 1984; Fenigstein *et al.*, 1975) have proposed that ATSCI scale to measure long-term conformity tendency. Bearden and Rose (1990) used the ASCI scale to explain the conformity; consumers with a high ATSCI score would consider interpersonal relationships in the selection of products, and consider whether their purchase and use of products would be accepted by others.

Studies on marketing and consumer behavior have suggested two causes of conformity in consumption. First, when confused over which product or service to purchase, a person may base his or her purchase behavior on the decisions of others (Aarts and Dijksterhuis, 1999; Bearden and Etzel, 1982; Burnkrant and Cousineau, 1975; Cohen and Golden, 1972; Park and Lessing, 1977). Second, people tend to seek favorable opinions about themselves; therefore, the opinions or demands of a society or group to which an individual belongs will affect his or her purchase decisions (Bearden and Rose, 1990; Meyer and Anderson, 2000; Rosenbaum and Massiah, 2007). Therefore, the conformity theory helps explain the mutual influence on group members. Some empirical studies have also shown that conformity has positive effect on consumers' purchase intentions.

## **2.5 Social ties**

A network is a group of related people or groups who communicate and share information with each other. A social network depicts the interaction of a member with the rest of a community; this network comprises multiple ties between nodes, with each node denoting an actor (e.g., a family member, friend, classmate, or peer) and each tie representing the interaction between two nodes (Hanneman and Riddle, 2005). Relationships that are developed and connected online constitute a social graph. Brown and Reingen (1987) introduced the concept of social networks into communication research and defined tie strength as the degree to which the information sender and receiver are familiar with each other. Their analysis used the frequency of social contact and the importance attached to the relationship between the information sender and receiver to categorize connection strength into “strong ties” and “weak ties.” A strong tie indicates a close relationship between the sender and receiver; they might live near each other or share a friendship. Word-of-mouth spreading occurs frequently among individuals involved in strong ties; this can exert considerable influence on purchase decision-making. A weak tie suggests that the sender and receiver are mere acquaintances or do not know each other. The access to information from weak ties is more varied and plentiful than information from strong ones.

Empirical research into social ties has shown that the more nodes connected within the social network of a community member, the denser that social network; furthermore, interaction occurs frequently in highly connected communities, allowing information to circulate readily among all members (Gnyawali and Madhavan, 2001). Koch and Lockwood (2011) defined a strong tie as a close friend or family member, and a weak tie as simply an acquaintance. The more interconnected the people in a network are, the more effects that network can produce. Weak ties may yield valuable information and opportunities and facilitate innovation; thus, by gossiping or sharing their interests and hobbies on social media, people may be rewarded serendipitously. Adams (2011) expressed that strong ties represent the people with whom a person spends the most time, whereas weak ties are mere acquaintances. Consumers trust and tend to base their purchase decisions on the experiences of

those with whom they have the strongest ties. Accordingly, the use of social networking sites has a strong influence on the expansion of individuals' interpersonal relationships and the connectivity of their social networks.

## **2.6 Brand attitude and purchase intention**

Social media can contribute to business growth because interacting with consumers online may exert positive effects on brand evaluation and purchase intention (Stephen and Galak, 2012). Therefore, this study defines brand attitude as consumers' preference for brands or products after they watch the advertising of brand networks. Thus, purchase intention indicates a consumer's readiness to buy a product or products from a brand; stronger purchase intention suggests a higher probability that the consumer will actually buy the product (Gwinner and Swanson, 2003; Lardinoit and Derbaix, 2001; Schiffman and Kanuk, 2000). Therefore, this study defines purchase intention as consumers' intention of purchasing products after they watch the advertising of brand networks.

## **2.7 Hypotheses**

### **2.7.1 Moderating effects of conformity situation**

Brand community websites enable information exchange between firms and consumers and provide a highly interactive social environment. Gift-giving SVPE-C2C and exchange SVPE-B2C (Keng *et al.*, 2012) both characterize brand communities. Gift-giving SVPE-C2C emphasizes the mutually beneficial relationship in which firms share information and opinions with their brand community members and interact with them in a hospitable manner. Exchange SVPE-B2C refers to an interest-oriented transaction in which a firm asks its brand community members to participate in a substantive act of exchange (e.g., receiving discounts in return for sharing the posts of promotional content). Consumers who exhibit high conformity are subject to social influences; they base their purchase decisions on other people's information and act in line with the expectations of like-minded groups (Lascu and Zinkhan, 1999).

On the basis of the above studies, this study defines gift-giving SVPE-C2C as a mutually beneficial process in which the members of a Facebook fan group share information about a brand, and posts created in the group are followed by

multiple responses. Thus, the brand attitude and purchase intention of consumers with high conformity may improve in the context of gift-giving SVPE-C2C, whereas MVPE and SVPE are not expected to exert significantly different effects on the brand attitude and purchase intention of consumers with low conformity. Accordingly, the following hypothesis is proposed:

**H1:** The brand attitude and purchase intention of high-conformity consumers becomes stronger in the context of gift-giving SVPE-C2C, whereas MVPE and SVPE exert non-significantly different levels of influence on the brand attitude and purchase intention of low-conformity consumers.

### **2.7.2 Moderating effects of social tie situation**

Valerio *et al.* (2013) examined the strength of social ties in social media and identified factors affecting the strength of the ties between Facebook users in the context of virtual communities; the authors reported slight differences, as well as similarities, between the online and offline social networks of consumers. Wang and Chang (2013) pointed out that market salesmen had become aware of the importance of social ties, and that the social ties of consumers would influence their purchase decisions. Followers with weak ties may contribute substantially to online communities, for example, by sharing product information via Facebook (Shih, 2009). This allows them to obtain social exchange benefits.

As such, this study defines strong ties as a relative or close friend of a brand community member who has a strong social influence on the member, and a weak tie as a virtually present acquaintance of a brand community member. Therefore, the brand attitude and purchase intention of consumers with strong ties may improve when their Facebook walls contain information about the fan group of a brand that is posted by their friends. Accordingly, the following hypothesis is proposed:

**H2:** The brand attitude and purchase intention of consumers with strong ties becomes stronger in the context of gift-giving SVPE-C2C; MVPE has a stronger influence than SVPE on the brand attitude and purchase intention of consumers with weak ties.

### **2.7.3 Different of conformity, the interaction effects of VPEs and social ties**

When the collective presence of brand community members heightens their

awareness of each other, it produces interpersonal social influences, even if they appear with virtual identities. In this case, discussion about a brand creates virtual product experiences among the members, which affects purchase decision-making. Moreover, social shopping allows like-minded consumers to interact with each other and form their purchase decisions by obtaining information about product quality or bargains. Consumer conformity in online communities' correlates positively with their online impulsive purchase intention (Lee *et al.*, 2008), indicating that they tend to alter consumption behavior to gain a sense of belonging in the virtual world.

Although strong ties produce stronger effects on purchase decisions than weak ones do, the anonymity and interactivity of social media highlight the underlying benefits of weak connections between consumers who are unfamiliar with each other (Chu and Kim, 2011). Wang and Chang's (2013) study found that the product information and recommendations provided by friends with whom consumers have strong ties are perceived as having a high diagnostic level, and increases the probability that consumers will purchase the product.

Therefore, this study proposes that in the context of gift-giving SVPE-C2C, consumers with high conformity and strong social ties may browse information from brand-related fan groups shared by their friends with noticeable effects on their brand attitude and purchase intention. However, MVPE and SVPE are not expected to exert significantly different effects on the brand attitude and purchase intention of consumers with high conformity and weak social ties, who base their purchase decisions on the decisions of others. Based on the above discussion, it is reasonable to propose the following hypothesis:

**H3:** The brand attitude and purchase intention of consumers with high conformity and strong social ties become stronger in the context of gift-giving SVPE-C2C, whereas MVPE and SVPE exert non-significantly different levels of influence on the brand attitude and purchase intention of consumers with high conformity and weak social ties.

Shopping websites allowing avatars are more likely to create positive brand attitude, high satisfaction, and strong purchase intention among consumers (Holzwarth *et al.*, 2006). OBC members can obtain brand information from each other through mere virtual presence (Keng *et al.*, 2012), because consumers with MVPE may engage in self-anchoring, perceiving themselves as part of a virtual

community. Therefore, this study proposes that consumers with low conformity and weak social ties do not tend to rely on product information provided by the stranger members of fan groups, and that members with avatars may lead to a positive brand attitude. Accordingly, the following hypothesis is proposed:

**H4:** The brand attitude and purchase intention of consumers with low conformity and strong social ties become stronger in the context of exchange SVPE-B2C, whereas MVPE has stronger effects on the brand attitude and purchase intention of consumers with low conformity and weak social ties.

#### **2.7.4 The interaction effect between conformity, social ties and VPEs**

On the basis of H3 and H4, it can be known that conformity (high/low) and social ties (strong ties/weak ties) could interfere with the correlation between VPE types (MVPE, Gift-giving SVPE-C2C, Exchange SVPE-B2C) and brand community effects. Thus, the above inference is developed into the following hypothesis:

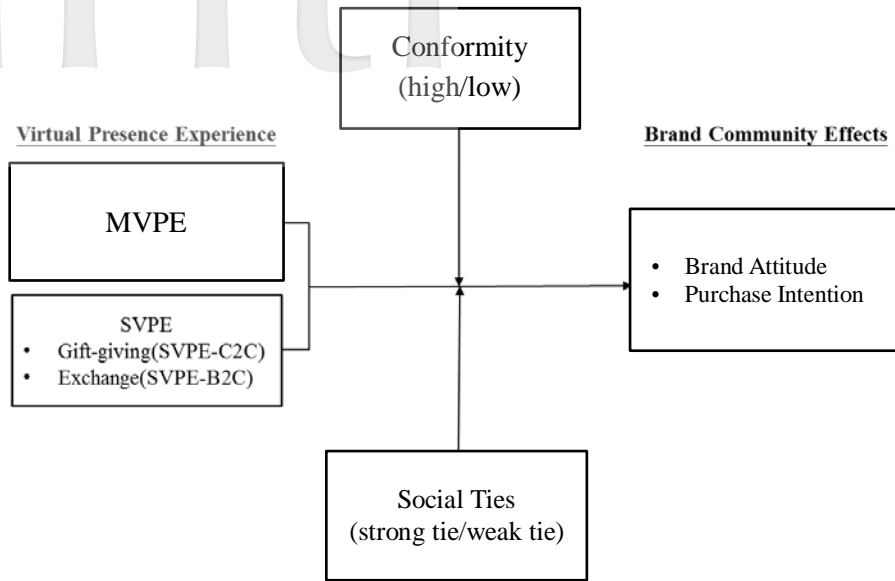
**H5:** Conformity and social ties have an interfering effect on the relationship between MVPE, SVPE, and brand community effects.

Accordingly, the effects of the three different VPE types of online virtual product experience on brand community effect were investigated. Moreover, different degrees of conformity and social ties among brand community members will influence the brand community effect. This study uses the experimental design; the research model is presented in Figure 1.

### **3. Research methodology**

#### **3.1 Design**

The current study employed a factorial design: 3 (MVPE, Gift-giving SVPE-C2C, Exchange SVPE-B2C)  $\times$  2 (conformity: high/low)  $\times$  2 (social ties: strong ties/weak ties). According to each experimental design, there are 6 groups of situations. Random sampling was used to assign participants into 6 groups as shown in Table 1.



**Figure 1**  
**Research Model**

**Table 1**  
**Experimental settings in the experiment**

|                      | Strong tie   | Weak tie     |
|----------------------|--------------|--------------|
| MVPE                 | Group 1 (31) | Group 2 (31) |
| Gift-giving SVPE-C2C | Group 3 (41) | Group 4 (34) |
| Exchange SVPE-B2C    | Group 5 (40) | Group 6 (28) |

Note: n, number of participants

### 3.2 Participants

With the adoption of experimental website building in this research, the samples are the users of network forums (PTT), social networks (Facebook), and students enrolled in universities and research institutes, with a total of 213 formal valid samples with random answers. In the overall tested sample structure, as shown in Table 2, there are 77 males and 136 females, accounting for 36.2% and 63.8%, respectively; their average age is 20-25 years old; regarding education background, university degree or above accounts for 93.5%; in terms of



occupation, most are students, accounting for 77.9%; Facebook fan group use experience is 6 months or above, accounting for 84.1%.

We used a Pearson's chi-square test for cross tabulation to analyze the randomization of the main characteristics (Gender  $p = 0.564$ ; Age  $p = 0.609$ ; Education  $p = 0.849$ ; Occupation  $p = 0.401$ ; Use experience on Facebook fan group  $p = 0.435$ ). The results indicate that these characteristics did not significantly differ from one another in each group.

**Table 2**  
**Main characteristics of the sample**

| Characteristics                    | Item                            | Frequency          | (%)  |
|------------------------------------|---------------------------------|--------------------|------|
| Gender                             | Male                            | 77                 | 36.2 |
|                                    | Female                          | 136                | 63.8 |
| Age                                | 0-19                            | 26                 | 12.2 |
|                                    | 20-25                           | 126                | 76.1 |
|                                    | 26-30                           | 19                 | 8.9  |
|                                    | 31-35                           | 4                  | 1.9  |
|                                    | 36-40                           | 1                  | 0.5  |
|                                    | Over 40                         | 1                  | 0.5  |
|                                    | Education                       | Junior high school | 14   |
| Senior high school                 |                                 | 129                | 60.6 |
| College                            |                                 | 70                 | 32.9 |
| Graduate school                    |                                 | 0                  | 0    |
| Occupation                         | Business                        | 12                 | 6.6  |
|                                    | Technology                      | 11                 | 1.4  |
|                                    | Advertisement                   | 2                  | 1.4  |
|                                    | Military/government/educational | 8                  | 3.3  |
|                                    | Service                         | 25                 | 4.7  |
|                                    | Student                         | 147                | 77.9 |
|                                    | Other                           | 39                 | 4.7  |
| Facebook fan group -use experience | 0-1 month                       | 15                 | 7.0  |
|                                    | 1-3 months                      | 9                  | 4.2  |
|                                    | 3-6 months                      | 10                 | 4.7  |
|                                    | 6-12 months                     | 31                 | 14.6 |
|                                    | 1-3 years                       | 54                 | 25.4 |
|                                    | Over 3 years                    | 94                 | 44.1 |

Note: N=213.

### 3.3 Stimulus

*Experimental product types.* Nelson (1970) suggested that the research product should contain both search and experience attributes when comparing the effects of consumer experiences. This research conducted a pre-test through 6 products: restaurants, clothing, sports shoes, watches, cameras, and headphones, with 36 students as pre-test samples. This experiment measures for product types are assessed using a 9-item scale (see Table 3), and used a Likert seven-point scale (1=strongly disagree to 7=strongly agree). This study proposed 1 item to assess experience qualities, 1 item to assess search qualities, and 7 items to assess product involvement. Duncan multiple comparison analysis results in Table 4. Therefore, this study selected "sports shoes" with experience and search ability, high search qualities and high degree of involvement as experimental products.

*Select experimental product brand.* This study based on participants' memory ask them, "I think the sport shoe is of good quality", and "I am very familiar with the sport shoe" by (Daugherty *et al.*, 2008). This research conducted pre-testing through 5 brands; le coq sportif, Fila, Pony, Royal and Nike, with 31 students as pre-test samples. This experiment used a Likert seven-point scale (1=strongly disagree to 7=strongly agree) for measurement. Duncan multiple comparison analysis results in Table 5, this research selects selected "Pony brand".

**Table 3**  
**Experimental product types measure items.**

| Measurement items   |
|---|
| 1. When purchasing XX products, I evaluate their quality before the purchase.   |
| 2. When purchasing XX products, I spend time and energy collecting information about similar products and then take it as the standard of quality evaluation. |
| 3. For me, XX products are important.   |
| 4. For me, XX products are annoying.  |
| 5. For me, XX products are exciting.  |
| 6. For me, XX products are attractive.  |
| 7. For me, XX products are worthless.   |
| 8. For me, XX products are worthy of being followed.  |
| 9. For me, XX products are unnecessary.   |

**Table 4**  
**Duncan multiple for select experimental product brand.**

| Item                        | Product type |    | Subset for alpha = 0.05 |       |        |       |
|-----------------------------|--------------|----|-------------------------|-------|--------|-------|
|                             |              |    | 1                       |       |        |       |
| <b>experience qualities</b> | Clothing     | 36 | 3.8333                  |       |        |       |
|                             | Headphones   | 36 | 3.8333                  |       |        |       |
|                             | Sports shoes | 36 | 3.9028                  |       |        |       |
|                             | Restaurants  | 36 | 3.9028                  |       |        |       |
|                             | Watches      | 36 | 3.9583                  |       |        |       |
|                             | Cameras      | 36 | 4.2361                  |       |        |       |
|                             | Sig.         | 36 | 0.080                   |       |        |       |
|                             |              |    | Subset for alpha = 0.05 |       |        |       |
|                             |              |    | 1                       |       | 2      |       |
| <b>search qualities</b>     | Headphones   | 36 | 4.97                    |       |        |       |
|                             | Restaurants  | 36 | 5.39                    |       |        |       |
|                             | Clothing     | 36 | 5.39                    |       |        |       |
|                             | Watches      | 36 | 5.58                    |       | 5.58   |       |
|                             | Sports shoes | 36 | 5.61                    |       | 5.61   |       |
|                             | Cameras      | 36 |                         |       | 6.17   |       |
|                             | Sig.         | 36 | 0.070                   |       | 0.080  |       |
|                             |              |    | Subset for alpha = 0.05 |       |        |       |
|                             |              |    | 1                       | 2     | 3      | 4     |
| <b>product involvement</b>  | Headphones   | 36 | 3.6349                  |       |        |       |
|                             | Cameras      | 36 | 3.7579                  |       | 3.7579 |       |
|                             | Watches      | 36 | 3.8373                  |       | 3.8373 |       |
|                             | Sports shoes | 36 | 3.9087                  |       | 3.9087 |       |
|                             | Restaurants  | 36 |                         |       | 4.0476 |       |
|                             | Clothing     | 36 |                         |       | 4.2183 |       |
|                             | Sig.         | 36 | 0.129                   | 0.260 | 0.114  | 0.174 |

*Design of VPE types experimental situation.* The design of the virtual product scenarios was based on the methods of previous scholars, who categorized social media users by their interaction patterns and their choice of social media platforms. Thus, this study set out to design the virtual product experiences of MVPE, Gift-giving SVPE-C2C, Exchange SVPE-B2C, and social ties (strong ties, weak ties) situations in which experimental web sites would provide the following six models (Figure 2; Figure 3).

**Table 5**  
**Duncan multiple for experimental brand types.**

| Measure item                               | Brand type     | n  | Subset for alpha = 0.05 |       |
|--|----------------|----|-------------------------|-------|
|  |                |    | 1                       | 2     |
| <b>I think the meal is of good quality</b> | le coq sportif | 31 | 4.26                    |       |
|  | Fila           | 31 | 4.29                    |       |
|  | Pony           | 31 | 4.45                    |       |
|  | Royal          | 31 | 4.52                    |       |
|  | Nike           | 31 |                         | 5.39  |
|  | Sig.           | 31 | 0.347                   | 1.000 |
| <b>I am very familiar with the meal</b>    | Royal          | 31 | 3.74                    |       |
|  | Fila           | 31 | 3.84                    |       |
|  | le coq sportif | 31 | 3.94                    |       |
|  | Pony           | 31 | 4.42                    |       |
|  | Nike           | 31 |                         | 5.12  |
|  | Sig.           | 31 | 1.000                   | 1.000 |

*Strong ties situation* refers to when a subject's friends were members in a fan group. *Weak ties situation* refers to the members of a Facebook fan group who did not know each other. *MVPE situation* refers to the mere virtual presence of the members without avatars in the group, and where posts in the group were followed by comments from members whose avatars showed their feet in the sneakers of a particular brand without displaying their personal features (e.g., face) or information (e.g., age and gender). *Giving SVPE-C2C situation* refers to the wall of a subject's Facebook page, including product information posts that were shared by his or her friends and followed by *comments* and *likes* from friends. Members of a Facebook fan group who had avatars exchanged ideas about each post created in the group. *Exchange SVPE-B2C situation* refers to the wall of the Facebook fan group for a branded firm that included promotional posts (about discounts that were offered in return for sharing such posts). Members of the group had their personal features (e.g., face) and information (e.g., age and gender) displayed. Posts were followed by *comments* and *likes* from friends.

*Manipulation check of VPE types and social ties.* To check the manipulation for the web site design according to the items regarding the MVPE of Naylor



(c) Strong ties × Exchange SVPE-B2C



(b) Strong ties × Gift-giving SVPE-C2C



(a) Strong ties × MVPE

Figure 2  
 Design strong ties × different VPE types of experimental situation



(a) Weak ties × MVPE



(b) Weak ties × Gift-giving SVPE-C2C



(c) Weak ties × Exchange SVPE-B2C

Figure 3  
Design weak ties × different VPE types of experimental situation

*et al.* (2012) and SVPE of Skågeby (2010), this research conducted revisions and reductions of eight items in this experiment and manipulation check of social ties by five items was based on the literature (Calder *et al.*, 2009) (both 5-point Likert scale, 1 = strongly disagree to 5 = strongly agree).

*Measurement of constructs.* Conformity measured thirteen items which adopted ATSCI (the Attention to Social Comparison Information Measure) from Bearden and Rose (1990) and the measures for social tie was assessed using five items scale adopted from Calder *et al.* (2009) (both 5-point Likert scale, 1 = strongly disagree to 5 = strongly agree). The variables of brand attitude was assessed using four items as suggested by Raman (1996) scales and purchase intention measured three items adapted from Holzwarth *et al.* (2006) (both 7-point Likert scale, 1 = strongly disagree to 7 = strongly agree)

*Reliability and validity.* The sample shown in Table 6 demonstrates a reasonable level of reliability; the conformity scale ( $\alpha = 0.88$ ), social tie scale ( $\alpha = 0.87$ ), brand attitude scale ( $\alpha = 0.91$ ) and purchase intention scale ( $\alpha = 0.95$ ) achieved a Cronbach's  $\alpha$  value greater than 0.7. Nunnally and Bernstein (1994) asserted that a Cronbach's  $\alpha$  value of between 0.7 and 0.9 denotes superior reliability. The composite reliability (CR) for the constructs are high than 0.91 all greater than the suggested cut-off value of 0.70 (Hair *et al.*, 1998). The average variance extracted (AVE) range from 0.52 to 0.91, exceeding the recommended value of 0.50 (Fornell and Larcker, 1981). All the remaining constructs showed good internal and consistency reliability.

### 3.4 Procedures

This experiment is conducted on a web site; data are collected by a survey social network platform; subjects are required to link to the experimental web

**Table 6**  
**Measurement scale reliability and validity for constructs**

| Construct          | Measure items | Cronbach's $\alpha$ | CR   | AVE  |
|--------------------|---------------|---------------------|------|------|
| Conformity         | 13            | 0.88                | 0.93 | 0.52 |
| Social tie         | 5             | 0.87                | 0.91 | 0.67 |
| Brand attitude     | 4             | 0.91                | 0.94 | 0.79 |
| Purchase intention | 3             | 0.95                | 0.97 | 0.91 |

site; the experiment process is conducted via online questionnaire. This experiment was conducted on a web site. First, the research procedure was explained to participants who were then requested to sign into a Facebook account on an experimental website. Second, in order to improve the accuracy of study presented the Facebook page on the experimental website. When participants connected to the experiment site (Heroku), Facebook asked the participants to download the program. If the participants agreed to authorize, Facebook returned a list of friends, pictures and names. Third, the participants were randomly assigned to one of the sessions. They were instructed to browse the web. Finally, participants responded to manipulate the scale of VPE types and social ties. They then responded regarding the measurement scale of conformity, brand attitude, and purchase intention. Subjects then clicked the leave button to close the experimental window.

## **4. Research results**

### **4.1 Manipulation check**

To verify whether the effect of VPE types had been successfully manipulated, eight manipulation evaluation items concerning MVPE, Gift-giving SVPE-C2C, and Exchange SVPE-B2C were implemented. A one-way ANOVA test showed that for the experimental web site there were significant differences ( $p\text{-value} < 0.01$ ), as shown in Table 7. The study conducted a manipulation check of social ties, and five manipulation evaluation items by independent sample t-test. As displayed in Table 8, the results indicate that social ties were significant ( $p\text{-value} < 0.01$ ). The manipulation of VPE types and social ties was successful and therefore, the effectiveness of the web page scenarios was confirmed.

Social ties and conformity were used as moderating variables. The Attention to Social Comparison Information Measure (Bearden and Rose, 1990), which comprises 13 items, was employed to measure conformity. Subjects were assigned, based on a median score of 43.63, into high-conformity ( $> 43.63$ ) and low-conformity ( $< 43.63$ ) groups. Table 9 presents the number of subjects in both groups in different experimental settings.



**Table 7**  
**One-way ANOVA of VPE types manipulation**

| VPE types            | n  | Mean | SD    | F-value | p-value |
|----------------------|----|------|-------|---------|---------|
| MVPE                 | 72 | 7.65 | 1.994 |         |         |
| Gift-giving SVPE-C2C | 73 | 6.21 | 2.186 | 14.303  | 0.000** |
| Exchange SVPE-B2C    | 68 | 5.91 | 2.042 |         |         |

Notes: \* $p < 0.05$ , \*\* $p < 0.01$

**Table 8**  
**T-test value of social ties manipulation**

| Social tie | n   | Mean  | SD    | t-value | p-value |
|------------|-----|-------|-------|---------|---------|
| Strong tie | 108 | 23.32 | 5.556 | -7.225  | 0.000** |
| Weak tie   | 105 | 17.62 | 5.962 |         |         |

Notes: \* $p < 0.05$ , \*\* $p < 0.01$

**Table 9**  
**The conformity groups' experimental settings of high and low subjects**

| Study group                       | High conformity | Low conformity | Total |
|-----------------------------------|-----------------|----------------|-------|
| Strong tie × MVPE                 | 20              | 11             | 31    |
| Weak tie × MVPE                   | 19              | 22             | 41    |
| Strong tie × Gift-giving SVPE-C2C | 20              | 14             | 34    |
| Weak tie × Gift-giving SVPE-C2C   | 22              | 17             | 39    |
| Strong tie × Exchange SVPE-B2C    | 25              | 15             | 40    |
| Weak tie × Exchange SVPE-B2C      | 16              | 12             | 28    |

Note: N=213

## 4.2 Hypotheses verification

MANOVA was used to test all the proposed hypotheses. Table 10 shown testing H1 to H5 results. Regarding *H1*, the results suggested interaction effects between the VPE types and conformity level (Wilks'  $L = 0.955$ ,  $F = 2.404$ ,  $p\text{-value} = 0.049 < 0.05$ ), and significant differences between brand attitude ( $F = 3.588$ ,  $p\text{-value} = 0.029 < 0.05$ ) and purchase intention ( $F = 3.501$ ,  $p\text{-value} = 0.032 < 0.05$ ) in high-conformity subjects with different types of VPE. According to the research results, if consumers exhibit high conformity and face different VPE types, then they will have a strong brand attitude and purchase intention in the gift-giving SVPE-C2C social virtual product community. Thus, *H1* is supported.

Similarly, for *H2*, the results suggested no significant interaction effect between VPE types and social ties (Wilks'  $L = 0.973$ ,  $F = 1.442$ ,  $p\text{-value} = 0.219 > 0.05$ ). Moreover, the VPE types and social ties had nonsignificant interaction effects on brand attitude ( $F = 1.840$ ,  $p\text{-value} = 0.161 > 0.05$ ) and purchase intention ( $F = 2.735$ ,  $p\text{-value} = 0.067 > 0.05$ ). Thus, *H2* is not supported. According to the research results, the consumers with strong social ties were not interested in the gift-giving SVPE C2C combinations, as is suggested in the hypothesis. Moreover, the consumers with weak social ties did not show much

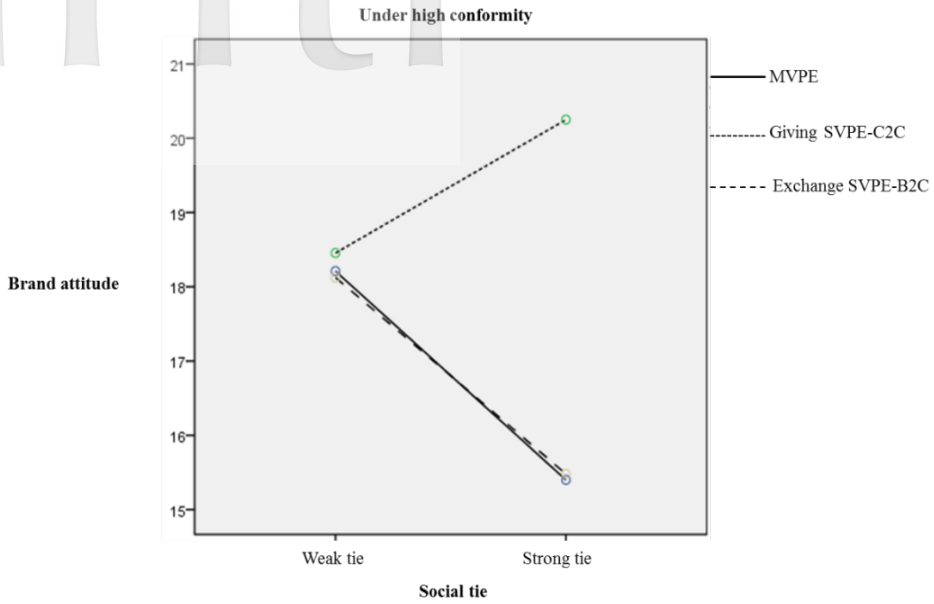
**Table 10**  
**Results of MANOVA statistics**

| Independent variable                       | Dependent variable | df | F-value | p-value |
|--|--------------------|----|---------|---------|
| VPE types × Conformity                     | Brand attitude     | 2  | 3.588   | 0.029*  |
|  | Purchase intention | 2  | 3.501   | 0.032*  |
| VPE types × Social tie                     | Brand attitude     | 2  | 1.840   | 0.161   |
|  | Purchase intention | 2  | 2.735   | 0.067   |
| High-conformity:<br>VPE types × Social tie | Brand attitude     | 2  | 3.611   | 0.030*  |
|  | Purchase intention | 2  | 3.026   | 0.050*  |
| Low-conformity:<br>VPE types × Social tie  | Brand attitude     | 2  | 5.096   | 0.008** |
|  | Purchase intention | 2  | 3.105   | 0.050*  |
| VPE types × Social tie ×<br>Conformity     | Brand attitude     | 2  | 5.625   | 0.004** |
|  | Purchase intention | 2  | 3.409   | 0.035*  |

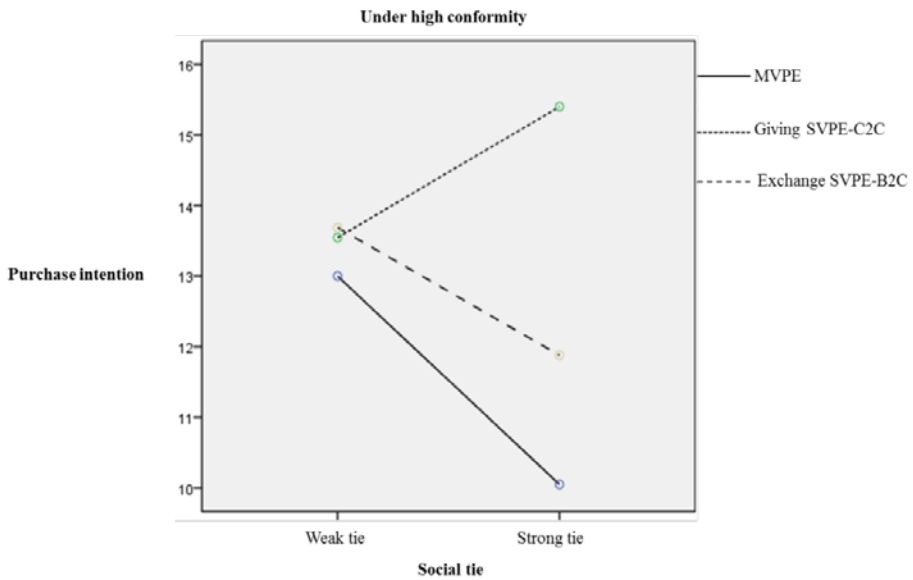
Notes: \* $p < 0.05$ , \*\* $p < 0.01$

interest in the MVPE member interaction model. Testing *H3* and *H4* results in Table 8. According to *H3*, which examined whether high-conformity consumers' brand attitude and purchase intentions differed across the different social ties strengths and VPE types, the results of MANOVA showed significant interaction effects between the VPE types and social ties among high-conformity consumers (Wilks'  $L = 0.935$ ,  $F = 1.973$ ,  $p\text{-value} = 0.049 < 0.05$ ). Therefore, if consumers exhibit high conformity, then there will be a noticeable interaction between different VPE types and social ties. Moreover, the VPE types and social ties had significant interaction effects on the consumers' brand attitude ( $F = 3.611$ ,  $p\text{-value} = 0.03 < 0.05$ ) and purchase intention ( $F = 3.026$ ,  $p\text{-value} = 0.05$ ). Thus, *H3* is supported. Figures 4 and 5 indicate that the brand attitude and purchase intention of high-conformity consumers with strong social ties became significantly stronger in the context of exchange SVPE-B2C than was the case with the other VPE types. Hence, if consumers exhibit high conformity on a brand community website with strong social ties, then they will show stronger brand attitude and purchase intention towards SVPE-B2C and SVPE-C2C than MVPE. If these consumers are on a brand community website with weak social ties, then there will be no noticeable difference in brand attitude and purchase intention among MVPE, SVPE-B2C, and SVPE-C2C.

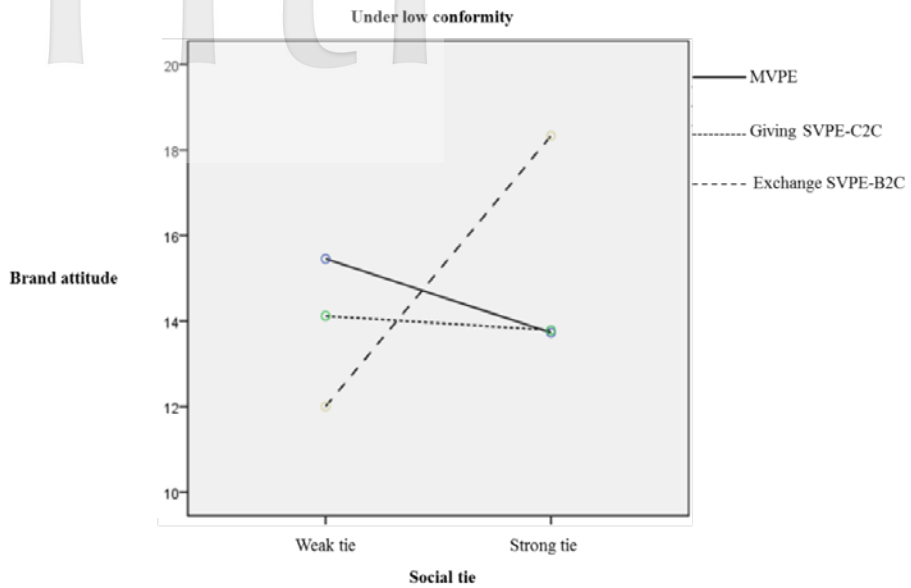
Regarding *H4*, which examined whether low-conformity consumers' brand attitude and purchase intentions differed in strength across different social ties strengths and VPE types, the results suggested significant interaction effects between the VPE type and social ties among low-conformity consumers (Wilks'  $L = 0.874$ ,  $F = 2.920$ ,  $p\text{-value} = 0.023 < 0.05$ ). Therefore, if consumers exhibit low conformity, then there will be a noticeable interaction between different VPE types and social ties. In addition, between the effects of VPE types and social ties on their brand attitude ( $F = 5.096$ ,  $p\text{-value} = 0.008 < 0.05$ ) and purchase intention ( $F = 3.105$ ,  $p\text{-value} = 0.05$ ). Thus, *H4* is supported. Figures 6 and 7 suggest nonsignificant differences in the brand attitude and purchase intention of low-conformity consumers with weak social ties across all VPE types. Hence, if consumers exhibit low conformity on a brand community website with strong social ties, then they will show stronger brand attitude and purchase intention towards SVPE-B2C than MVPE and SVPE-C2C. If consumers exhibit low



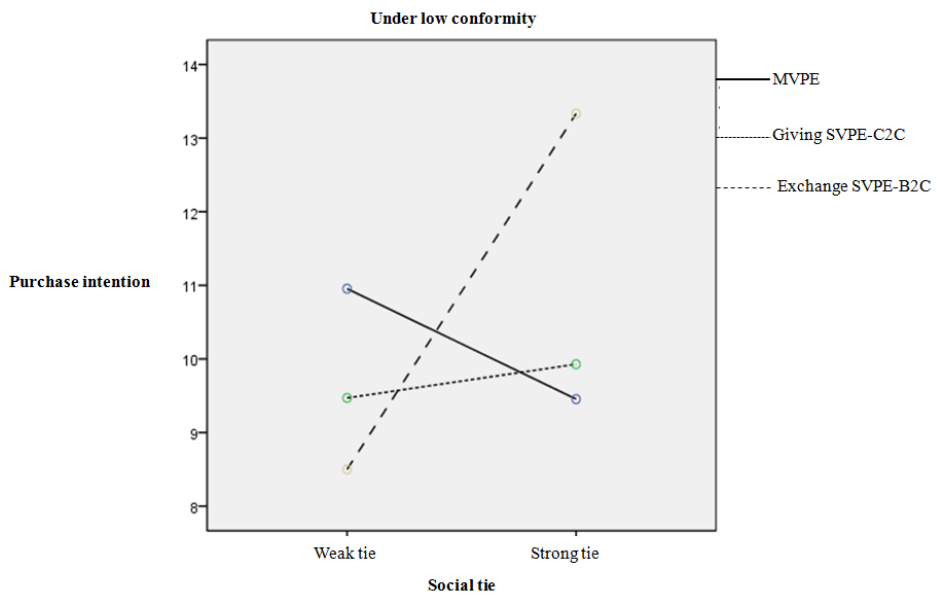
**Figure 4**  
MANOVA of high-conformity consumers on the brand attitude



**Figure 5**  
MANOVA of high-conformity consumers on the purchase intention



**Figure 6**  
MANOVA of low-conformity consumers on the brand attitude



**Figure 7**  
MANOVA of low-conformity consumers on the purchase intention

conformity on a brand community website with weak social ties, then they will show stronger brand attitude and purchase intention towards MVPE than SVPE-B2C and SVPE-C2C. The MANOVA was conducted to verify  $H5$ , which examined the interaction effects among conformity, social ties, and VPE types on brand attitude and purchase intention. The results suggested significant interaction effects among all three variables (Wilks'  $L = 0.945$ ,  $F = 2.890$ ,  $p\text{-value} = 0.022 < 0.05$ ). Moreover, all three variables had significant interaction effects on brand attitude ( $F = 5.625$ ,  $p\text{-value} = 0.004 < 0.01$ ) and purchase intention ( $F = 3.409$ ,  $p\text{-value} = 0.035 < 0.05$ ). Thus,  $H5$  is supported. Thus, conformity and social ties have an interfering effect on the relationships between VPE types and brand attitude and between VPE types and purchase intention.

## **5. Discussion**

### **5.1 Summary of findings**

This paper discussed the interaction between members of brand communities in the online virtual world. It was determined that brand community members engaged in interpersonal interactions and obtained product information across all the three VPE types. Even when they appeared only with personal avatars in communities, they still had social influence. People are by nature an effective medium for the transmission of information. Brand community members with strong social ties characterized by a varied, extensive interpersonal network play a vital role in fostering conformity, which determines the preferred VPE type (either MVPE or SVPE) in their communities. As such, when a member of a brand community conducts an information search and a pre-purchase assessment, the prevailing interpersonal interaction pattern and VPE (e.g., showing support for product information shared by a friend) in the community may reduce the member's concerns about a product the community is devoted to. In this way, his or her evaluation of similar products is facilitated, and his or her knowledge and trust regarding the product's brand improvement. The findings of this study agree with those of Kevin (2010), that social networking sites allow consumers to not only share product reviews and shopping experiences, but also to receive information about a brand from each other and to develop an image and attitude about that brand accordingly.

## **5.2 Theoretical contributions and managerial implications**

The influence of preferred online social settings on the shopping values and purchase decisions of consumers is poorly understood. To address this research gap, this study proposed analysis the influence of the three VPE types on product advertisements. This study argues that an online brand community allows the exchange of information about a product or service (Parsons, 2002) and that both MVPE and SVPE satisfy the social needs of the members of such communities. These findings extend the concepts of social ties (Brown and Reingen, 1987) and conformity (Lascu and Zinkhan, 1999), indicating that the influence of social ties on brand attitude and purchase intention varies widely depending on the strength of the ties.

To facilitate the management of their brand communities, branded firms should take into account the conformity of members and the strength of their social ties. Specifically, when members of their fan groups (whose friends are also enrolled in the same groups) exhibit high conformity, the firms can cite different forms of statistics (e.g., the number of likes and shares per post and the number of fans online) generated from the members' activities. These may be used to highlight the group's cohesiveness and enhance confidence in their grasp of the brand, thereby satisfying the desire for individualization.

To stimulate consumption among members with low conformity but strong social ties, firms can adopt exchange SVPE-B2C, stressing the specificity of internal events. Moreover, some of the brand community members seek only discount-related information. Thus, firms can launch raffles to offer gifts or discounts as prizes, thereby increasing consumer preference for their brands. However, to satisfy the needs of brand community members with low conformity and weak social ties for product information and to strengthen their involvement, firms can implement gift-giving SVPE-CSC. This will emphasize the notion that certain members have helped others by posting their experiences in using certain products (as well as other forms of relevant information, such as pictures of themselves with the products).

## 6. Limitations and future research

This study has certain limitations, which must be noted, despite the cautious steps that were taken during the theoretical deduction and data collection. First, the strength of social ties in the experimental cyber settings was manipulated in such a way that both friends and non-friends appeared in the brand communities, and the avatars of friends were set to be purely experimental. Thus, subjects may have perceived those “friends” as fictitious, resulting in inconsistent questionnaire results.

Second, future studies can be addressed by investigating (a) the influence of the size of brand community membership on subjects’ perceptions about the presence of their friends, and (b) the influence of various factors on consumers’ positive and negative emotions or brand selection. Third, as the selection of products only focuses on 5 brands of sports shoe, they were selected as the research product in this study. Future studies can focus on different products and conduct different comparisons, such as search products, experiential products, and credence products. Final, an online questionnaire survey was used to collect data in this study, thus, future research can use different methods and compare the experimental results obtained with different research methods.

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