IMPACT OF MACHINE AND INTERPERSONAL VIRTUAL EXPERIENCE COMBINATIONS ON SENSE OF VIRTUAL COMMUNITY: THE MODERATING ROLES OF OPTIMUM STIMULATION LEVEL AND MOTIVES FOR READING CUSTOMER ARTICULATIONS

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ABSTRACT

Providing an online virtual community may be one effective way to retain potential customers. Prior research indicated sense of virtual community (SOVC) exerts a significant influence on consumers' purchase intention. The effect of persuasive advertising mainly depends on the richness of virtual product experiences (VPEs). This study aims to analyze the relationships between different combinations of VPEs and SOVC. We conducted two experimental studies on two website to investigate the main effects and interaction. The result of the study provides evidence that different combination of interpersonal virtual experience with machine virtual experience would generate different SOVC. We also found the indirect effects of optimum stimulation level (OSL) and levels of motives for reading customer articulations between VPEs and SOVC variables (membership and immersion). Past related studies examined the advertising effects of VPEs chiefly on machine interaction (e.g., 3D advertising). This study is one of the first to examine empirically combinations of machine interaction with interpersonal interaction.This paper provides a review of the major perspectives in the concept of SOVC and 3D advertising or virtual reality. These punctuate the importance as well as the contribution of this paper.

Keywords: Machine virtual experience; Interpersonal virtual experience; Sense of virtual community (SOVC); Optimum stimulation level (OSL); e-WOM

1. Introduction

Social Networking Sites (SNSs) have profoundly changed the ways for people to interact via the Internet, and these changes have impacted the perceived appeal of websites. The areas of Interaction Orientation, Social

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Networking and User-added Value contribute to the attractiveness of social media platforms [Wirtz et al. 2013]. The product knowledge that consumers acquire is always through experience, that is, they learn by interacting with product-related services [Li et al. 2001]. Direct product experience is usually regarded as the optimal way for consumers to learn about product information. Research has found virtual product experiences (VPEs) to be similar to direct product experiences [Bourlakis et al. 2009; Hoffman & Novak 1996; Keng et al. 2012] and can thus influence consumer's attitudes and intentions [Chiou et al. 2008]. Hence, many of online businesses struggle to provide a virtual product experience, so that consumers are able to virtually interact with products prior to purchase [Klein 1998]. Marketers widely utilize virtual technology to affect consumers' experiences in order to attract their shopping intention in virtual environments [Lau et al. 2013]. Many researchers claim that the use of virtual technology provides consumers with unique shopping experiences, such as telepresence [Haans & IJsselsteijn 2012; Hyun & O'Keefe 2012; Park et al. 2008; Riva 2007], high level of interactivity [Mollen & Wilson 2010] and multisensory feedback [Jin 2009; Jin & Yongjun 2010]. Since the Internet is rapidly becoming an important sales channel, we have focused our study on developing how online businesses can generate a unique VPE to enable different consumers to virtually experience their products.

From a marketing perspective, virtual experience can be exhibited through web advertising, and the persuasiveness of the advertising increases when the richness of virtual experience is amplified [Bhatt 2004; Keng & Lin 2006; Klein 1998]. Virtual communities and word of mouth (WOM) are also marketing tools [Casaló et al. 2007]. Most companies seek to establish brand-strengthening online communities whose function is to raise consumer awareness of product-related issues, as well as to provide consumers with a forum in which to discuss, share, and promulgate such information [McWilliam 2000; Spaulding 2010]. In computer-generated communities, virtual interactive communications can be an important determining factor when choosing a product or service. Interactivity in computer-mediated environments can be divided into interpersonal interaction and machine interaction. Although the importance of these virtual experiences is continuously increasing, past related studies [Bourlakis et al. 2009; Daugherty et al. 2008; Goel & Prokopec 2009; Griffith & Chen 2004; Keng et al. 2012; Klein 1998; Li et al. 2001, 2002] primarily examined the advertising effects of VPEs on machine interaction (e.g., 3D advertising). This current study is one of the first to examine empirically combinations of VPEs (interpersonal and machine interaction).

One focal concept explaining community dynamics and facilitating the vitality of the virtual community is a sense of virtual community (SOVC) [Blanchard 2008; Blanchard & Markus 2004; Koh & Kim 2003; Sangwan et al. 2009]. SOVC has been used to analyze various online virtual communities including blogs [Blanchard 2004], listservs, bulletin boards [Blanchard 2008], and discussion forums [Blanchard & Markus 2004; Ellonen et al. 2007; Koh & Kim 2003]. Koh & Kim [2003] first determined that SOVC consists of membership (people who experience feelings of belonging to their virtual community), influence (people who influence other members of their virtual community), and immersion (people who feel the state of flow during virtual community navigation), which are affected by characteristics of a virtual community, and influences the strength of the relationship between a consumer and product. SOVC is a relatively new research field, and hence, it is still at its initial stages to enhance understanding of how a SOVC explores the expected benefits to community members. A majority of studies on SOVC have been conducted at the community level development processes and practices [Blanchard 2008; Blanchard & Markus 2004; Ellonen et al. 2007; Roberts et al. 2002]. However, there is a lack of investigation directly related to individual-level actions [Koh & Kim 2003]. Cheng et al. [2012] indicated that SOVC exerts a significant influence on consumers' purchase intention. VPEs can influence consumer's attitudes and intentions and raise consumer expectations on the probability of future purchase as well [Chiou et al. 2008]. What types of individual-level VPEs lead to an experienced SOVC? It would be invaluable to understand the conditions under which SOVC develops. This study attempts to fill the gap and addresses the effect of various combinations of VPEs on SOVC.

A relevant concern is whether different moderating variables affect consumers under different virtual experiences. Raju [1980] pointed out that the role of the optimum stimulation level (OSL) for consumers affects their information-searching behavior, and may have an effect on their reception to information; this means that different combinations of virtual experiences may generate a different stimulation and satisfaction for consumers from different OSLs. Thus, the current study treats OSL for consumers as a moderating variable and examines the role of OSL in exploratory consumer behavior. Furthermore, the Internet provides a significant environment for the convenient exchange of information for consumers [Sun et al. 2006]. In online markets, e-WOM plays a determinant role in shoppers' online purchasing decisions. Lu et al. [2014] asserted both the valence and variance of online reviews that have had a significant impact on online product sales, especially for experience goods, since reviews reduce uncertainty and risk by a less cognitive load and more awareness. Henning-Thurau & Walsh [2004] summarized five motivations towards consumers' decisions to read customer articulations, and these motivations

reflect personal characteristics. In view of previous findings, we argue that consumer recommendations are more influential than expert recommendations. In other words, a review on a product by other consumers may play a more critical role for evaluating the product and making a decision to purchase [Bae & Lee 2011]. To our knowledge, this study is at the forefront of research focusing on the moderating effect of motives for reading customer articulations.

Current research is keen to provide further insights for marketing managers on how they may help stimulate favorable consumer evaluations based on online product reviews and an optimal level of stimulation on consumer responses to advertisements. In addition, we expect an interaction effect between combinations of VPEs and SOVC. The result could be applied to and could enrich our understanding of the development of both corporate brand communities and marketing strategies.

2. Theoretical background

2.1 Virtual Experiences

Virtual communities are composed of individuals who share similar interests, experiences, expertise and backgrounds. Community experience based on similar backgrounds or interests and the exchange of information with other members, which may comprise virtual experiences, influences consumers learning and brand relationships [Mandel & Johnson 2002]. Consumers are able to interact with products in virtual environments, thus stimulating a new form of experience—a virtual product experience (VPE) [Daugherty et al. 2008]. A VPE takes place via a product representation that, coupled with its sensory-rich mediated environment, activates the consumer's mental processes [Babin et al. 1994; Daugherty et al. 2008; Guo & Barnes 2009; Keng et al. 2012; Mackenzie et al. 2009]. Burke [1997] proposed that the effect of persuasive advertising mainly depends on the richness of VPE. Indirect product experience is similar to VPE in that both are mediated experiences, and also VPE resembles direct product experience in that both are interactive [Henning-Thurau & Walsh 2004; Keng et al. 2012].

Interactivity in a computer-mediated environment can be classified as interpersonal interaction and machine interaction [Hoffman & Novak 1996]. Interpersonal interaction includes dialogue, communication, and the exchange of information among users via a medium that creates a virtual interpersonal experience, and that could be a chat room or a virtual community, for example [Casaló et al. 2007]. An online community involves a higher degree of interpersonal interaction. Machine virtual experience is the interaction between users and content via hypermedia. A visitor's interactions with a website are regarded as a human-machine interaction.

2.1.1 Interpersonal Virtual Experiences

The community website provides an environment in which users can socialize and interact with other members, and obtain social experiences. Recent studies provide compelling evidence that people are involved in building new interpersonal relationships in a computer-mediated environment [Bordia 1997; Meyers 1987]. The virtual communities do indeed upgrade virtual interpersonal relationships among group members [Shen et al. 2010]. Royo-Vela & Casamassima [2011] showed that active participative belonging to a virtual community may enhance consumer satisfaction, affective commitment, and word-of-mouth advertising, more positively towards the brand. Wooldridge [1999] proposed that consumers, while receiving a service, may have subjective experiences, therein, from interpersonal interactivities. Voorveld et al. [2009] provided an integrated literature review of consumers' responses to brand-community. There is convincing evidence that perceived interactivity of a community could strengthen an effective response to the community. Some community features are perceived as more interactive, and members also had a more positive impression of the community.

Online consumer behavior can be categorized into three types: transactional, informational, and social. While traditional E-commerce is conducted with the use of the transactional and informational aspects of online shopping, social commerce focuses on supporting the social aspects of shopping, and potentially enhances the informational aspect as well [Shen 2012]. Traditional E-commerce lacks the social aspect, since it is viewed as lacking the warmth of human interaction and sociability. Drawing on the aforementioned studies on interactions between emotional intensity and intimacy among community members, our current study identifies two categories of interpersonal virtual experiences: (1) Social virtual experiences: intimate relationships and frequent interaction among members when participating in an online discussion group or online polling platform. (2) Information virtual experiences: interactions with low intimacy and low participation in interpersonal relationships while browsing online information on products and services through online activities.

2.1.2 Machine Virtual Experiences

Machine interactivity refers to an interaction between a person and a computer-mediated environment. Pine & Gilmore [1999] summarized the four dimensions of machine virtual experience as: entertainment, aesthetics, education, and escapism. Telepresence can be defined as a human/machine system in which the human operator receives sufficient information about the teleoperator and the task environment, in that the operator feels physically present at the remote site [Sheridan 1992]. Steuer [1992] used the term 'telepresence' to describe a compelling sense

of being present in the mediated virtual environments, and a high degree of telepresence is related to high degrees of vividness and interactivity. Passive participation is associated with low telepresence, whereas active participation is associated with high telepresence.

Cho [1999] used the elaboration likelihood model to describe the process of consumers' interacting with advertising information on websites. In the theory of persuasion, central routes and peripheral routes are related to involvement to the extent of information processing from advertisements. For consumers with a high level of involvement, they carefully consider benefits and disadvantages of online advertising to obtain desired knowledge and information, and with the central routes being more persuasive. In contrast, for those with a lower level of involvement, consumers may be unwilling or unable to devote sufficient energy; persuasive factors, such as appealing pictures, text, and music, influence persuasion effects, namely, the peripheral routes that would be more persuasive.

While interpersonal virtual experience can be divided into social virtual experience and information virtual experience, machine virtual experiences can be classified as entertainment, aesthetics, education, and escapism. For the sake of telepresence which was found to have a positive impact on persuasion [Keng & Lin 2006], we used only entertainment experiences and escapism experiences in our experiments, which provided a medium to high degree of telepresence. Therefore, we have pared interpersonal virtual experience (two types) and machine virtual experience (two types) to produce four groups in our studies.

2.2 The relationship between virtual experience and SOVC

A virtual community is generally defined as "a group of people with common interests or goals, interacting predominantly in cyberspace." Wang & Wei [2011] pointed out that the development and continuity of a virtual community relies on enhancing the knowledge sharing intentions of community members through member interactions, community participation, and community promotion. SOVC reflects the community member's current psychological state towards a community, and such states are built over time on the basis of virtual-community activities and experiences [Li et al. 2001]. The SOVC concept has its roots in the Sense of community (SOC)—feelings of connection and belonging to a social grouping—deriving from McMillan & Chavis [1986]. SOVC can help distinguish virtual communities from mere virtual groups. Virtual communities, as opposed to virtual groups, should have many-to-many communications in which members continually share information and support. Virtual groups are more likely to have one-to-many communications or have more limited group interactions. A virtual social group equates to a virtual community only while the social group creates its own SOVC [Blanchard & Markus 2004].

SOVC is a focal construct explaining community dynamics and facilitating the vitality of the virtual community [Blanchard 2008; Blanchard & Markus 2004; Koh & Kim 2003; Sangwan et al. 2009]. Koh & Kim [2003] defined SOVC as consisting of membership, influence, and immersion. The characteristics of a virtual community including enjoyability, leader enthusiasm, and offline activities, influence SOVC. Enjoyability can derive from the interactions among members or between members and texts [Cyr et al. 2009]. When a member's needs are fulfilled through various forms of interaction via computer-mediated communication, enjoyability is then produced and exerts a positive effect on SOVC. This means, enjoyability has a significant impact on SOVC either by machine interaction or interpersonal interaction; community enjoyability affects membership, while immersion and enjoyability can be produced by virtual machine experiences [Koh & Kim 2003]. In other words, different VPEs combinations (interpersonal and machine) exert different effects on SOVC [Keng et al. 2011].

Consequently, we have concluded that different combinations of interpersonal virtual experience (on-line community) and machine virtual experience (3D computer animation and advertising) may engender different SOVC. Furthermore, social interpersonal VPEs involve interpersonal interactions, with an emphasis on participants holding similar values. Zhou [2011] found that both social identity and group norms produced through social interpersonal VPEs have significant effects on user participation in virtual communities. Hence, social VPEs would produce a greater sense of belonging to a community than do information VPEs.

2.3 Moderating effects of the optimum stimulation level (OSL)

There are many factors to be taken into consideration when making decisions. One of the important factors is the latent desire for stimulation [Sheth et al. 1999]. Optimum stimulation level (OSL) is an entity's pursuit of the proper stimulation level, which can influence the purchasing behavior of consumers. Raju [1980] found that people possessing high OSL become anxious when seeking stimulation. Flore et al. [2005] found a positive relationship of an optimum stimulation level and recreational shopping of a hedonic value. Holbrook & Hirschman [1982] concluded that hedonic value represents entertainment and emotional worth on a shopping trip, while utilitarian value primarily focuses on goal achievement. Steenkamp & Baumgartner [1992] showed that high-OSL consumers tended to pursue hedonic value rather than utilitarian value, whereas low-OSL consumers tended to be more utilitarian. Yoo et al. [2014] stated that the hedonic value of a virtual community (i.e. Twitter) is the key factor that

affects both the quantity and quality of information shared within that virtual community. In accordance with the theory of the elaboration likelihood model [Petty et al. 1983], that the central route website contents would be more favorable for eliciting utilitarian value, and the peripheral route would be more favorable for eliciting hedonic value. Thus, we can infer that entertainment experience (the peripheral route to persuasion) is more persuasive for high-OSL consumers, whereas escapism experience (the central route to persuasion) is more persuasive for low-OSL consumers.

In terms of interpersonal virtual experience, social interpersonal experience refers to a higher level of online human interactions than do information interpersonal experience, and seems to be more geared to hedonism than to utilitarianism for web users. Therefore, we can hypothesize that high-OSL consumers would represent better SOVC through social interpersonal experiences than do low-OSL consumers, whereas low-OSL consumers would represent better SOVC through information interpersonal experiences than do high-OSL consumers.

Perceived playfulness (or enjoyment) is recognized as a key determinant for motivating users' acceptance of websites [Moon & Kim 2001], and are found to have a direct positive relationship with SOVC variables (membership and immersion) [Koh & Kim 2003]. Recent studies have pointed out that levels of participation precede the development of SOVC [Blanchard & Markus 2004; Ellonen et al. 2007; Sangwan et al. 2009; Yoo et al. 2002]. The higher playfulness (entertainment machine VPEs + social interpersonal VPEs) the high-OSL members perceive from the virtual community, the more interaction they engage in that particular virtual community and its members. In addition, satisfaction from hedonic needs also gives rise to a sense of belongingness (membership) which in turn increases immersion (or flow) behavior toward their community via daily on-line communications [Koh & Kim 2003].

However, low-OSL consumers are more reluctant to take risks when compared to high-OSL ones, so that they rely on a lot of information to reduce their perceived risk related to a purchase. In the online context, usefulness has a strong impact on a consumers' decision to adapt information within online communities [Cheung et al. 2008]. Thus, low-OSL members are most likely to participate in the virtual community when they perceived the virtual community as useful for exchanging information (i.e. escapism machine VPEs + information interpersonal VPEs). Perceived usefulness is observed to have a significant effect on a members' sense of belonging to the virtual community [Sondakh & Giovano 2012], then members could feel immersed while participating in the community [Koh & Kim 2003]. Hence, we posit:

H1. *Variations in SOVC membership are associated with different OSLs for consumers under four different combinations of VPEs (entertainment machine VPEs + information interpersonal VPEs, entertainment machine VPEs + social interpersonal VPEs, escapism machine VPEs + information interpersonal VPEs, escapism machine VPEs + social interpersonal VPEs).*

H1-1. *Consumers with high OSL, entertainment machine VPEs + social interpersonal VPEs would exhibit the highest level of membership.*

H1-2. *Consumers with low OSL, escapism machine VPEs + information interpersonal VPEs would exhibit the highest level of membership.*

H2. *Variations in SOVC immersion are associated with different OSLs for consumers under four different combinations of VPEs (entertainment machine VPEs + information interpersonal VPEs, entertainment machine VPEs + social interpersonal VPEs, escapism machine VPEs + information interpersonal VPEs, escapism machine VPEs + social interpersonal VPEs).*

H2-1. *Consumers with high OSL, entertainment machine VPEs + social interpersonal VPEs would exhibit the highest level of immersion.*

H2-2. *Consumers with low OSL, escapism machine VPEs + information interpersonal VPEs would exhibit the highest level of immersion.*

2.4 Moderating effects of the motives for reading customer articulations

Sproull & Kiesler [1991] concluded that discussions via the Internet are more open than face-to-face discussions, and have a broader scope in terms of issues. The motivations behind consumer's knowledge sharing have become an important part of the proliferation of virtual communities. Knowledge sharing behaviour in virtual communities is determined by all four key forces: utilitarian motivation (reputation), hedonic motivation (enjoying helping), control belief (self-efficacy) and contextual force (sharing culture) [Liao et al. 2013]. Steffes & Burgee [2009] found that information obtained from e-WOM forums is more influential in decision-making than speaking with friends in person (WOM). Henning-Thorsten & Walsh [2004] concluded that virtual community members desire to become involved in the information exchange, which means that the motives for using e-WOM platforms significantly affect the purchasing behavior of consumers, while socially-oriented motivations to join a virtual community significantly affects the social behavior of consumers. Yoon [2012] addressed e-WOM diffusion strategies are more effective when they are presented by using both images and text, based on the characteristics of products and the level of their

involvement. Consumers' shopping experiences involving product use are best conveyed to others when shoppers are opinion leaders playing a role as an "information hub" or a "gatekeeper." According to the similarity-attraction principle, people tend to communicate with those who are similar to them within online social networks [Balmaceda et al. 2014]. Accordingly, we propose that motives for reading customer articulations would affect consumers' post-'information gathering' actions.

2.4.1 Resource-matching Hypothesis

Anand & Sternthal [1990] proposed the resource-matching hypothesis (RMH) to explain the relationship between resource allocation and persuasion for vivid and nonvivid information. Peracchio & Meyers-levy [1997] found that the most powerful influence and persuasion effect of advertising is based on the balance of cognitive resources available (RA) and cognitive resources required (RR) for consumers. Keller & Block [1997] pointed out that advertising is most persuasive when it presents vivid information for consumers who have devoted a moderate amount of resources, while advertising is most persuasive when it presents nonvivid information for consumers who have devoted a considerable amount of resources. Vividness and interactivity are found to be significant determinants of telepresence. Heeter [1986] confirmed that various levels of vividness and interactivity lead to a different allocation of cognitive resources on websites for consumers. The lower the vividness, and interactivity, the more substantial amounts of cognitive resources for consumers are devoted.

2.4.2 Motives for reading customer articulations: A resource-matching perspective

In machine VPEs, escapist VPEs (high telepresence, central route, and high RR) devote more resources than entertainment VPEs (medium telepresence, peripheral route, and medium RR) do for consumers. In interpersonal VPEs, information virtual experience requires more resources (high RR) than do social virtual experience (low RR), because of interactions with lower levels of intimacy and focusing mainly on product-related messages. Consumers with higher intrinsic motivation when browsing e-WOM to obtain relevant information and learn how to purchase a product would allocate even more resources to community activities (high RA). Consumers with a higher level of socially-oriented motivations will devote more resources to community members (high RA).

According to resource-matching theory [Anand & Sternthal 1990], for consumers with higher motivation (high RA), the high RR escapist VPEs plus the high RR information interpersonal VPEs would exhibit the highest level of both membership and immersion. Besides, the combinations of entertainment VPEs (medium RR) and social interpersonal VPEs (low RR) will generate the same RR as the combinations of entertainment VPEs (medium RR) and information interpersonal VPEs (high RR). This is because consumers with medium motivation still prefer high interactivity (social interpersonal VPEs in this study). Therefore, for consumers with medium motivation (medium RA), the combination of entertainment VPEs and social interpersonal VPEs will exhibit the highest level relative to membership and immersion. Moreover, for consumers with low motivation (medium to low RA), the combination of entertainment VPEs (medium RR) and information interpersonal VPEs (high RR but low interactivity) will exhibit the highest level of membership and immersion.

We thus propose the following hypotheses.

H3. *Variations in SOVC membership are associated with different motives for reading customer articulations for consumers under four different combinations of VPEs (entertainment machine VPEs + information interpersonal VPEs, entertainment machine VPEs + social interpersonal VPEs, escapism machine VPEs + information interpersonal VPEs, and escapism machine VPEs + social interpersonal VPEs).*

H3-1. *Consumers with high motivation, escapism VPEs + information interpersonal VPEs would exhibit the highest level of membership.*

H3-2. *Consumers with medium motivation, entertainment VPEs + social interpersonal VPEs would exhibit the highest level of membership.*

H3-3. *Consumers with low motivation, entertainment VPEs + information interpersonal VPEs would exhibit the highest level of membership.*

H4. *Variations in SOVC immersion are associated with different motives for reading customer articulations for consumers under four different combinations of VPEs (entertainment machine VPEs + information interpersonal VPEs, entertainment machine VPEs + social interpersonal VPEs, escapism machine VPEs + information interpersonal VPEs, escapism machine VPEs + social interpersonal VPEs).*

H4-1. *Consumers with high motivation, escapism VPEs + information interpersonal VPEs would exhibit the highest level of immersion.*

H4-2. *Consumers with medium motivation, entertainment VPEs + social interpersonal VPEs would exhibit the highest level of immersion.*

H4-3. *Consumers with low motivation, entertainment VPEs + information interpersonal VPEs would exhibit the highest level of immersion.*

3. Methodology

3.1 The Conceptual Model

Drawing from elaboration likelihood model (ELM) and resource-matching hypothesis (RMH), we have developed our framework for this research. This study combined machine VPEs with interpersonal VPEs, with OSL and 'motives for reading customer articulations' as moderating variables, and illustrated the relationship between VPE combinations and SOVC. Our research model is shown in Fig. 1.

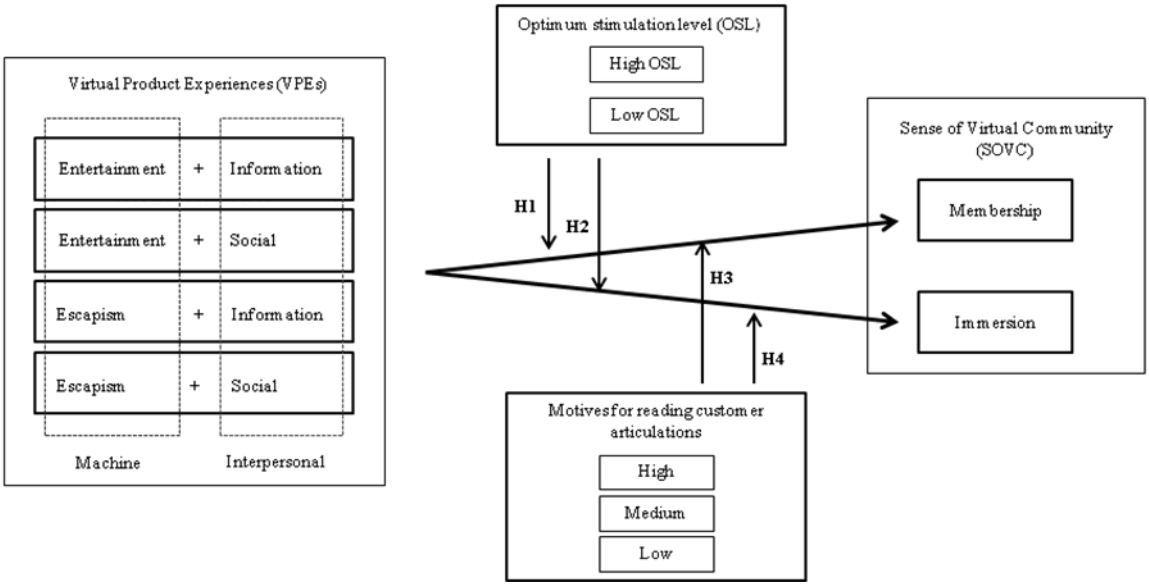


Fig. 1: The Research Framework

3.2 Research design

In the current study, we conducted experiments on two websites. According to the level of interpersonal interaction and intimacy, this study divided interpersonal VPEs into social VPEs and information VPEs. A high degree of effort was put into designing for telepresence experience (vividness and interactivity) to provide two types of machine VPEs. A 4 (between subjects) x 2 (within-subjects) factorial design was performed in Study 1 and a 4 (between subjects) x 3 (within-subjects) factorial design in Study 2. Different groups were assigned to each condition (one of combinations of virtual machine experiences with virtual interpersonal experiences). Research subjects were randomly assigned to four groups in both study 1 and study 2.

We designed two experiments to verify the above four hypotheses. Study 1 focused on detecting a significant effect between different combinations of VPEs and SOVC, using OSL as a moderating variable based on ELM [Petty et al. 1983]. We randomly selected a group of online shoppers—in this case a convenient sample of university students—and let each subject rated the favorableness, comprehension, and persuasiveness of levels of stimulation. Then we split the sample into high-OSL and low-OSL groups on the basis of the mean OSL scale score. If there were significant differences, Hypothesis 1 and Hypothesis 2 would be confirmed.

Study 2 used the same convenient sample and also focused on testing the main effects and interaction between different combinations of VPEs and SOVC, with 'motives for reading customer articulations' as a moderator based on Henning-Thurau & Walsh [2004]. We then asked each subject to rate themselves on the motives behind reading a review that describes one's experience and knowledge to evaluate the product and make purchase decisions on the Internet. Next, we performed cluster analysis on motivations to split subjects into three groups (low, medium, and high motivation). If there were significant differences, Hypothesis 3 and Hypothesis 4 would be confirmed.

From the results of Study 1 and Study 2, we expected to obtain the best advertising effects among combinations of virtual product experiences and virtual communities. In addition, repeatedly performing significance tests in Study 1 and Study 2 can also ascertain whether the manipulation of virtual product experiences would be successful. While manipulation checks appear to be significant, our results are more likely to be applicable in the real world.

3.3 Sample selection

Altogether, 260 questionnaires were collected, of which 247 were valid in study 1; and 250 questionnaires were

collected, of which 236 were valid in study 2. Table 1 presents profiles of the experiments' participants. Our study's findings were consistent with the conclusions disclosed by Nathan & Yeow [2011], who found that the use of the Internet among university students was higher than among other demographic segments in Taiwan. According to a survey report in 2010 on Internet usage in Taiwan by the Taiwan Network Information Center, the percentage of males who were Internet users was 74.16%, and the percentage of females who were Internet users was 70.93%. Regarding the percentages of Internet users who, classified according to age, had Internet experience in Taiwan, the "20-to-24 year old" age group had the highest percentage of 95.11%; the second-highest percentage corresponded to the "15-to-19 year old" age group, with 93.92%; the next-highest percentage corresponded to the "25-to-34 year old" age group, with 91.35%. Of Internet users' aged from 12 and older, 48.09% had used the Internet for 10 years or more, and 29.92% had used the Internet for at least 5 years but less than 10 years. Regarding educational background, 83.63% of the surveyed Internet users had a junior college degree. There is a consistency between the above findings and the result of the current study in terms of age, education, and Internet-use experience.

Table1: Main characteristics of the samples (Study 1 N = 247; Study 2 N = 236).

		Study 1		Study 2	
Characteristics	Item	Frequency	(%)	Frequency	(%)
Gender	Female	51	20.6%	50	21.2%
	Male	196	79.4%	186	78.8%
Age	0-18	19	7.7%	24	10.2%
	19-23	75	30.4%	65	27.5%
	24-28	87	35.2%	83	35.2%
	29-35	46	18.6%	45	19.1%
	Over 35	20	8.1%	19	8%
Education	Junior high school	9	3.6%	7	3%
	Senior high school	45	18.2%	42	17.8%
	College	169	68.4%	157	66.5%
	Graduate school	24	9.7%	30	12.7%
The usage experience of Internet (years)	0-1	6	2.4%	4	1.7%
	1-3	11	4.5%	9	3.8%
	3-5	51	20.6%	51	21.6%
	Over 5	179	72.5%	172	72.9%
The usage experience of community (Yes/No)	No	13	5.3%	12	5.1%
	Yes	234	94.7%	224	94.9%

According to survey reports on Internet-related consumer behavior in Taiwan (conducted by the Market Intelligence & Consulting Institute), females mostly preferred buying dresses and cosmetics, whereas males mostly preferred buying electronic devices. For the current study, we chose a digital camera as the experimental product presented on the experimental websites of VPEs; consequently, the percentage of males exceed of females in our sample. In addition, using a MANOVA, we examined the significance between these characteristics and SOVC, and the analytical results revealed no significant differences between any of the characteristics and SOVC (Sex $p = .308$; Age $p = .142$; Education $p = .247$; Internet-use experience $p = .913$; "Community website" use experience $p = .361$).

3.4 Product and brand selection

Klein [1998] demonstrated that the Internet is a dominant source of information, through which consumers can virtually experience product functions. Experience goods are those that consumers are eager to try in order to reduce their indecisiveness before making a purchase [Girard et al. 2003; Nelson 1970, 1974]. In order to investigate the impact of VPE combinations, the current study selected experience goods on the basis of Nelson's [1970] definition. A pre-test was conducted to choose the appropriate product categories for the main experiment based on a 7-point Likert scale and to evaluate the products in terms of discrimination and clarity. In total, ten product categories:

notebook computer, mobile phone, digital camera, contact lenses, clothes, restaurants, wristwatch, shoes, furniture and a tour schedule were selected for the pre-test, and according to 59 copies of a 20-item questionnaire collected, the results of an analysis of variance (ANOVA) showed that the ten products we selected vary significantly (p = 0.001). Followed by Duncan's multiple comparisons tests, that indicated the digital camera as the experimental product.

The digital camera of a real-life brand was used in our experiments to assess the effects of individual differences in the perception of VPEs. To avoid the influence of brand familiarity of consumers on experimental results, this study selected a brand with the intermediate reputation. This study selected 11 digital-camera brands and the statistical results showed Fuji with the intermediate reputation of quality and familiarity, therefore, "Fuji" was then selected as the brand of the experimental product.

3.5 Virtual Experience Design

Interpersonal Virtual Experience Design: In the light of the level of interpersonal interaction and intimacy, we divided interpersonal VPEs into two types of community (social VPEs and information VPEs), and to accomplish this task we designed virtual-community websites. The information content of the digital camera was consistent in both social VPEs and information VPEs. In the context of the manipulation for VPEs, there was a great deal of diversity among community members who posted and responded to articles between Information VPEs and Social VPEs. Information VPEs (low interpersonal interaction) emphasized manufacturer messages, test reports, and related news about the Fuji Z2 digital camera. Only a small number of people used the forum to discuss professional practice questions and issues. Social VPEs (high interpersonal interaction) emphasized feedback and information sharing regarding the digital camera. An interpersonal relationship is a strong, deep, and close association between two or more people. We measured the level of interactivity based on the scale developed by Srinivasan et al. [2002] and Wu [2000] with a few specific modifications to better suit this study.

Machine Virtual Experience Design: Stimuli were found to be clearly distinguishable from one another, and these differences were associated with variances in individual experience. Direct experience allows for the full sensory inspection of the real product, and indirect experience (mediated traditional print advertising) offers a limited amount of sensory stimuli [Daugherty et al. 2008]. For the current study, we designed the VPEs according to a literature review taken from [Hoffman & Novak 1996; Keng & Lin 2006; Keng et al. 2012; Petty et al. 1983; Steuer 1992]. The experimental websites featured design elements resemble real life objects. We conducted vivid interactive experimental websites to provide the following realms of VPEs: (1) Entertainment VPEs (medium interactivity, high vividness, medium telepresence, peripheral route) emphasized points of interest by means of 2D Flash web pages, eye-catching images, compelling text, and online games. In addition, the characteristics of the Fuji Z2 digital camera appeared on the Flash webpage. The advertising graphic image utilized such as animation and flashing displayed on a website aimed to influence users via the peripheral route of persuasion. Ducoffe [1996] defined five elements contained in peripheral entertainment experiences, namely entertainment, happiness, pleasantness, fun, and excitement. Entertainment experience was measured using a 5-item scale developed by Ducoffe [1996]. (2) Escapist VPEs (high interactivity, high vividness, high telepresence, central route) showed the camera-related information on Flash web pages. Realistic 3D visualizations of the Fuji camera allowed consumers to capture different visual angles of the Fuji camera and settings in a stunning 3D environment, so that consumers could experience the digital camera, as well as virtually via telepresence. Hoffman & Novak [1996] defined the flow experience in a computer-mediated environment as "the state that occurs during network navigation," and adapted the flow concept to virtual environments. Active participants in virtual communities may get more immersive (or addictive) when they experience the flow state during virtual community navigation, so escapist experience was measured using the 7-item scale developed by Novak et al. [2000]. Additionally, each experience-themed website presented an equal amount of information.

3.6 Measurement

This study examines the role of OSL in exploratory consumer behavior. Its measurement was adopted using both a 7-item scale developed by Steenkamp & Baumgartner [1992], and a 7-point Likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). The SOVC scale is based on Koh & Kim [2003] and comprises three key components: membership, influence, and immersion; however, they did not find that enjoyability had a substantial effect on the dimension of "influence". Some authors also posit that influence may not be as important in virtual settings as it is in traditional communities [Blanchard 2008; Blanchard & Markus 2004; Obst et al. 2002]. Furthermore, influence refers to the extent to which group members feel they can make a difference in their community. In our view, however, its effects are most applicable to long-term measures. Tracking an online impact of the dimension of "influence" was hard to estimate accurately in our short-term experiments. Hence, the current study did not examine the construct of "influence". Although a real-life example of SOVC measurement was not easily available, we have developed a hypothetical but realistic demonstration of how the real-world community was

evolved and delivered virtual product experiences, enabling them to give their customers an immersive interaction with their products, and thereby enriching their online shopping experience. The motives of reading articulations were measured using a 16-item scale developed by Henning–Thurau & Walsh [2004], and on a 7-point Likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree).

3.7 Experimental procedure

We conducted two experiments on two websites. The websites had a program attached to their webpages to prevent subjects from either returning to a previous page or repeatedly clicking the same webpage. In study 1, subjects were required to link to the experimental website, apply for an account, and fill out a personal- information form stating their gender, age, and educational background, Internet-use experience, and whether they had previously used a community website. The subjects then received an introduction to the experiment, and filled out the questionnaire regarding the moderating factor OSL. For the second part, subjects were randomly assigned to one of four virtual- experience groups (Table 2). The third part focused on SOVC evaluation. The procedure of study 2 was the same as that of study 1, with the exception that study 2's moderating factor was the motive for reading customer articulations.

Table2: Sample size for four groups of virtual experiences

	Study 1		Study 2	
Combination	Group	Sample size	Group	Sample size
Entertainment + Information	1	55	1	55
Entertainment + Social	2	65	2	65
Escapism + Information	3	59	3	60
Escapism + Social	4	68	4	56
Total		247		236

4. Results

4.1 Reliability and validity analysis

In terms of reliability, the internal consistency was analyzed using composite reliability (CR). The values of CR were well above the cutoff point of 0.6, as suggested by Fornell & Larcker [1981]. Most measurement items were even highly above the threshold of 0.7 [Guo & Barnes 2009] as reported in Table 3 (study 1: membership=.892, immersion=.911, OSL=.870) and Table 4 (study 2: membership=.927, immersion=.924, five factors of motives for reading customer articulations =.871 .628 .836 .752 .830 respectively). Notably, the value of the factor of social orientation through information, one of five factors of motives for reading customer articulations, was below 0.7 (see Table 4), with the use of more strict criteria of CR. However, socially comparing how others' opinions measure up to their own opinions in order to evaluate the product and to determine their social position referring to a crucial factor of motives for reading customer articulations [Hennig-Thurau & Walsh 2004]. Thus, this could be considered a fatal flaw while dispelling the factor with the use of more strict criteria of CR. The values indicated the reliability checks supported satisfactory levels of stability and internal consistency of constructs.

Table 3: Items and Reliability (Study 1)

Variables / Items	Factor loading	Composite Reliability	AVE
Membership for SOVC			
I feel as if I belong to the virtual community.	0.745	0.892	0.674
I feel membership in my virtual community.	0.838		
I feel as if my virtual community members are my close friends.	0.861		
I like my virtual community members.	0.834		
Immersion for SOVC			
I spend much time on-line in my virtual community.	0.901	0.911	0.719
I spend more time than I expected navigating my virtual community.	0.845		
I feel as if I am addicted to my virtual community.	0.904		
I have missed classes or works because of my virtual community activities.	0.731		
OSL			
I like to continue doing the same old things rather than trying new and different things.	0.57	0.870	0.491
I like to experience novelty and change in my daily routine.	0.784		
I like a job that offers change, variety and travel, even if it involves some dangers.	0.682		
I am continually seeking new ideas and experiences.	0.801		
I like continually changing activities.	0.698		
When things get boring, I like to find some new and unfamiliar experience.	0.662		
I prefer a routine way of life to an unpredictable one full of change.	0.68		

Discriminant validity was assessed through Average variance extracted (AVE), and higher VE indicates better reliability and convergent validity of a latent construct. Fornell & Larcker [1981] suggested the recommended threshold is greater than 0.5. In another aspect, all construct AVE estimates should be larger than the corresponding squared interconstruct correlation estimates, and in all cases, the confidence intervals do not include 1.00. The AVE for each construct (the numbers in bold) as shown in Table 5 (study 1) and Table 6 (study 2) respectively was greater than the correlation with any other construct, reporting that the results supported the discriminant validity of constructs.

Table 4: Items and Reliability (Study 2)

Variables / Items	Factor loading	Composite Reliability	AVE
Membership for SOVC			
I feel as if I belong to the virtual community.	0.876		
I feel membership in my virtual community.	0.910		
I feel as if my virtual community members are my close friends.	0.864	0.927	0.761
I like my virtual community members.	0.839		
Immersion for SOVC			
I spend much time on-line in my virtual community.	0.890		
I spend more time than I expected navigating my virtual community.	0.896		
I feel as if I am addicted to my virtual community.	0.902	0.924	0.753
I have missed classes or works because of my virtual community activities.	0.778		
Motive of browsing e-WOM			
Obtaining buying-relevant			
Because contributions by other consumers help me to make the right buying decisions.	0.796		
To benefit from others' experiences before I buy a good or use a service.	0.811		
To benefit from others' experiences before I buy a good or use a service.	0.830	0.871	0.628
Because one saves a great deal of time during shopping when informing oneself on such sites before shopping.	0.730		
Social orientation through information			
Because I can see if I am the only one who thinks of a product in a certain way.	0.574		
Because I like to compare my own evaluation with that of others.	0.574		
Because through reading one can get the confirmation that one made the right buying decision.	0.491	0.628	0.297
Because I feel much better when I read that I am not the only one who has a certain problem.	0.538		
Community membership			
Because I am interested in what is new.	0.851		
Because I enjoy participating in the experiences of other community members.	0.843	0.836	0.565
Because I really like being part of such a community.	0.676		
Because I get to know which topics are "in"	0.606		
Remuneration			
Because I get a reward for reading and evaluating contributions.	0.821		
Because it allows me to earn a few more Deutschmarks.	0.730	0.752	0.603
To learn to consume a product			
Because I find the right answers when I have difficulties with a product.	0.860		
To find advice and solutions for my problems.	0.825	0.830	0.710

Table 5: Discriminant Validity (Study 1)

	Membership	Immersion	OSL
Membership	**.821**		
Immersion	.716	**.848**	
OSL	.039	.016	**.701**

Square root of AVE in bold on the diagonal

Table 6: Discriminant Validity (Study 2)

	Membership	Immersion	e-WOM 1	e-WOM 2	e-WOM 3	e-WOM 4	e-WOM 5
Membership	**.872**						
Immersion	.804	**.868**					
e-WOM 1	.180	.154	**.792**				
e-WOM 2	.172	.195	.467	**.545**			
e-WOM 3	.281	.265	.530	.505	**.752**		
e-WOM 4	.017	.123	.068	.319	.188	**.777**	
e-WOM 5	.175	.180	.571	.277	.545	.071	**.843**

Notes: AVE is computed by adding the squared factor loadings divided by number of factors of the underlying construct.

4.2 Manipulation check

This research applied the scales developed by Srinivasan et al. [2002] and Wu [2000] (but with few specific modifications to better suit this study) in conjunction with a seven-point Likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree) to measure the perceived interactivity. The study employed the t-test to examine the level of interactivity between two different interpersonal VPEs (information and social). The results indicate that the difference in level of interactivity between the information community and the social community is significant (p = 0.041 < 0.05) (Table 7). Moreover, the level of interactivity of the social virtual community (mean = 4.92) was higher than that of the information virtual community (mean = 4.38). Thus, confirming that the manipulation of interpersonal virtual experience was successful.

Table 7: T-test value (the level of interactivity between two different interpersonal VPEs)

	size	M	SD	t value	***p*-value**
Information VPEs	14	4.3810	.5040	-2.155	**0.041***
Interpersonal VPEs	13	4.9231	.7836		

*** p < .05**

We performed a one-way ANOVA comparing means of four groups between entertainment VPEs and escapism VPEs. Results revealed that the entertainment VPEs and escapism VPEs were both statistically significant (p=0.004 and 0.006 respectively, all < 0.05 in study 1; p=0.002 and 0.003 respectively, all < 0.05 in study 2). Furthermore, a one-way ANOVA was also carried out to test differences for the amount of information displayed on the two different websites. The result showed no significant differences (p=0.192 > 0.05 in study 1; p=0.162 > 0.05 in study 2), confirming equal amount of information available within the two different websites. Hence, the manipulation of the machine virtual experience was also successful.

4.3 Hypotheses testing

Study1—Moderating effect of OSL. We split the sample into high-OSL and low-OSL groups on the basis of the mean OSL scale score. We used ANCOVA (1) to examine whether high/low OSL moderate the relationship between different combinations of VPEs and SOVC, and (2) to estimate the effect of covariates on demographics, internet-use experience, and community experience. Analytical results showed that when demographics, internet-use experience, and community experience were controlled, there was a significant interaction between OSL and different combinations of VPEs on the "membership" dimension of SOVC (Table 8, p = .010 < .05). The results also indicated that age, sex, education, Internet-use experience, and community experience have no significant effect on the interaction between OSL and different combinations of VPEs; consequently, the various experimental groups were distributed randomly. Therefore, H1 was supported by the data. In addition, there was also a significant two-way interaction between OSL and different combinations of VPEs on the "immersion" dimension of SOVC (Table 8,

p = .001 < .05). The results showed that H2 was supported.

Table 8: ANCOVA Table (Moderating effects of OSL on SOVC)

	Membership				Immersion			
	High OSL		Low OSL		High OSL		Low OSL	
Interactions effect & Covariance	M	SD	M	SD	M	SD	M	SD
VPE combinations								
-Group 1	4.131	.740	4.500	.666	3.393	.921	4.169	.673
- Group 2	4.891	.820	4.364	.810	4.516	.896	3.856	.833
- Group 3	4.713	1.071	5.117	1.122	4.176	1.118	4.727	1.519
- Group 4	4.318	.783	4.464	.683	3.750	1.055	3.986	.853
VPE combination * OSL (P value)	.010*				.001*			
Covariance (F value)								
Age	.404				.761			
Sex	.978				.677			
Education	.898				.799			
Internet experiences	.630				.717			
Community experiences	.394				.559			

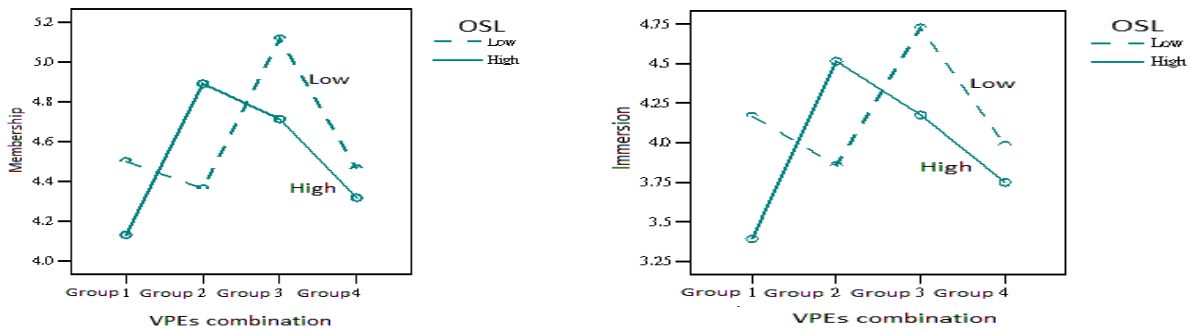
Group 1: Entertainment+Information; Group 2: Entertainment+Social
Group 3: Escapism+Information; Group 4: Escapism+Social
* p<0.05

We employed contrast analysis to illustrate the differences between different combinations of VPEs and "membership" dimension of SOVC under low/high OSL. With reference to the subjects with low-OSL, Table 9 and Fig 2 (interaction plots) report the results, subjects in Group 3 (escapism VPEs + information interpersonal VPEs) showed significantly greater contrast effect than those in Group 2 (entertainment + social interpersonal VPEs) and Group 4 (escapism + social interpersonal VPEs). With regard to the subjects with high-OSL, Table 9 and Fig 1 report subjects in Group 2 (entertainment+ social interpersonal VPEs) showed significantly greater contrast effect than those in Group 1 (entertainment+ information interpersonal VPEs). The experimental results with the "immersion" dimension of SOVC leads to the same results as above (Table 9 and Fig. 2); consequently, these data provide support for H1-1, H1-2, H2-1, and H2-2.

Table 9: Contrast effect (Main effects of virtual experience combinations on SOVC under different OSL)

		Membership		Immersion	
VPEs combination		Low OSL	High OSL	Low OSL	High OSL
Group 1 vs. Group 2	Contrast Estimate	.136	-.723	.324	-1.051
	Sig.	.516	.005*	.203	.000*
Group 2 vs. Group 3	Contrast Estimate	-.766	.146	-.865	.345
	Sig.	.001*	.544	.001*	.216
Group 3 vs. Group 4	Contrast Estimate	.663	.416	.722	.422
	Sig.	.002*	.080	.005*	.126

Group 1: Entertainment+Information; Group 2: Entertainment+Social
Group 3: Escapism+Information; Group 4: Escapism+Social
* p<0.05



Group 1: Entertainment + Information; Group 2: Entertainment + Social; Group 3: Escapism + Information
Group 4: Escapism + Social; OSL: Optimum stimulation level

Fig. 2: Effects of VPEs Combination on SOVC variables (membership and immersion) by OSL

Study 2—Cluster analysis of motives for reading customer articulations. Consumers' motivations to engage in e-WOM information might vary. Therefore, we performed cluster analysis on motivations to ensure a high level of consistency within the same cluster. A commonly used method of non-hierarchical clustering is the K-means method. Subjects were split into three groups (low, medium, and high motivation) as shown in Table 10. Besides, subjects with "low/ medium motivation" and "high motivation" were mainly in the 19-28 years old age group and 19-35 years old age group, respectively.

Table 10: Cluster analysis of motivation in browsing e-WOM

Motivation	A Group: low motivation	B Group: medium motivation	C Group: high motivation
Obtaining buying-relevant information	low	medium	high
Social orientation through information	low	medium	high
Community membership	low	medium	high
Remuneration	medium	low	high
To learn to consume a product	medium	medium	high
Sample size	85	96	55

Analytical results showed that there was a significant interaction effect between motives for reading customer articulations and different combinations of VPEs on the "membership" dimension of SOVC after the effects of demographics, internet-use experience and community experiences were controlled (Table 11, p=.001<.05). These results also indicated that neither demographics nor Internet-use experience had any influence on the interaction; thus, H3 was supported.

Table 11: ANCOVA Table (Moderating effects of Motivations on SOVC)

	Membership						Immersion					
	Motivation H		Motivation M		Motivation L		Motivation H		Motivation M		Motivation L	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
VPE combinations -Group 1	4.571	1.054	4.167	.726	4.813	1.115	4.036	1.172	3.583	.792	4.675	1.110
- Group 2	5.021	0.843	5.070	1.035	4.161	.953	4.750	.826	4.540	1.108	3.723	.949
- Group 3	5.434	1.060	4.571	.638	4.288	.446	5.211	1.068	3.976	1.123	4.237	1.065
- Group 4	4.875	.810	4.422	.735	3.926	.851	4.375	1.132	3.983	.871	3.706	.849
VPE combinations *Motivation (P value)			0.001*						0.000*			
Covariance (F value)												
Age			.053						.096			
Sex			.398						.082			
Education			.269						.440			
Internet experiences			.134						1.098			
Community experiences			3.743						.008			

Group 1: Entertainment+Information; Group 2: Entertainment+Social
Group 3: Escapism+Information; Group 4: Escapism+Social
* $p<0.05$

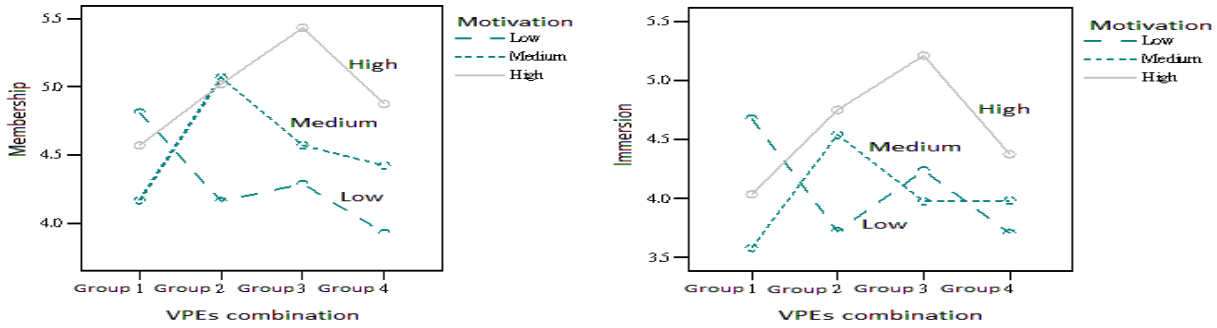
We employed contrast analysis to examine the differences between different combinations of VPEs and "membership" dimension of SOVC under low/medium/high motivation. With reference to the subjects with low motivation, Table 12 and Fig 3 (interaction plots) report the results, subjects in Group 1 (entertainment + information interpersonal VPEs) showed significantly greater contrast effect than those in Group 2 (entertainment + social interpersonal VPEs). In regard to the subjects with medium motivation, subjects in Group 2 (entertainment + social interpersonal VPEs) showed significantly greater contrast effect than those in Group 1 (entertainment + information interpersonal VPEs) and Group 3 (escapism + information interpersonal VPEs). For the subjects with high motivation, subjects in Group 3 (escapism + information interpersonal VPEs) showed significantly greater contrast effect than those in Group 4 (escapism + social interpersonal VPEs). Subjects in Group 3 exhibited the highest level of membership. Hence, these data provide support for H3-1, H3-2, and H3-3.

Analytical results showed after the effects of age, sex, education, Internet-use experience, and community experiences were controlled, there was a significant interaction between motives for reading customer articulations and different combinations of VPEs on the "immersion" dimension of SOVC (Table 11, $p = .000 < .05$). These results also indicated neither demographics nor Internet-use experience had any influence on the interaction, thus, supporting H4. We found the differences between different combinations of VPEs and "immersion" dimension of SOVC under low/medium/high motivation showed the same results with the "membership" dimension of SOVC discussed above (Table 12 and Fig 3). Accordingly, these data provide support for H4-1, H4-2, and H4-3.

Table 12: Contrast effect (Main effects of virtual experience combinations on SOVC under different levels of Motivations)

VPE combinations		Membership Motivations			Immersion Motivations		
		L	M	H	L	M	H
Group 1 vs. Group 2	Contrast Estimate	.563	-.886	-.481	.912	-.953	-.740
	Sig.	.039*	.000*	.244	.004*	.002*	.093
Group 2 vs. Group 3	Contrast Estimate	-.093	.526	-.325	-.487	.612	-.329
	Sig.	.734	.040*	.415	.127	.050*	.436
Group 3 vs. Group 4	Contrast Estimate	.368	.142	.634	.516	-.019	1.106
	Sig.	.261	.553	.018*	.138	.949	.018*

Group 1: Entertainment+Information; Group 2: Entertainment+Social
Group 3: Escapism+Information; Group 4: Escapism+Social
* p<0.05



Group 1: Entertainment + Information; Group 2: Entertainment + Social; Group 3: Escapism + Information
Group 4: Escapism + Social; Motivation: Motives for reading customer articulations

Fig. 3: Effects of VPEs Combination on SOVC variables (membership and immersion) by Motivation

5. Conclusions

5.1 Research conclusion

This research was established on the existing academic base, and conducted in-depth discussions on the impact of machine and interpersonal virtual experience combinations. This study complements and extends prior literature relating to SOVC. The result of the present study possibly will provide evidence that the combinations of machine VPEs and interpersonal VPEs exert a direct effect on SOVC. We also found the indirect effects of the level of optimum stimulation between combinations of machine VPEs, and interpersonal VPEs, and SOVC variables (membership and immersion), and that it could enhance the effects of SOVC through achieving an optimum level of sensory stimulation on telepresence. Sensory stimulation on telepresence must be consistent if a user is to feel immersed within a virtual environment. High-OSL seekers require a lot of irrelevant persuasion cues (peripheral route) and lots of interactivity to reach their optimal level of stimulation that they experience while participating in virtual knowledge-sharing communities to create a stronger SOVC, while low-OSL seekers require high degrees of message related thinking (central route) and a lower level of interactivity among members to develop their stronger SOVC.

The results also indicated that levels of motives for reading customer articulations moderate the relationship between different combinations of VPEs, and a sense of virtual community variables (membership and immersion). Consistent with resource-matching hypothesis [Anand & Sternthal 1990], subjects exhibiting a balance between RA and RR present a stronger SOVC than those exhibiting an allocation of either RA>RR or RA<RR. The motives for reading customer articulations will be enhanced when people have a good relationship with the online community. Virtual communities can provide a large amount of knowledge to members and should motivate their active participation in a high degree of involvement to eWOM messages for consumers with high motivation. Moreover, communities would provide greater hedonic benefits to community members with medium to low motivation.

5.2 Theoretical implications

The main theoretical implications of the paper are: First, the results from this study verify that combinations of

machine VPEs and interpersonal VPEs have a direct effect on SOVC. It also marked a major contribution to the theoretical concept of SOVC and 3D advertising or virtual reality [Daugherty et al. 2008; Griffith & Chen 2004; Klein 1998; Li et al. 2001, 2002]. Second, the current study uses OSL as a moderating variable based on the elaboration likelihood model (ELM), confirming that OSL has a moderating effect on the relationship between different combinations of VPEs and SOVC. Third, this study is an encompassing research to consumers' motives for reading customer articulations based on Henning-Thurau & Walsh [2004]. Our findings are consistent with the conclusion of the resource-matching hypothesis [Anand & Sternthal 1990]. To our knowledge, this study is at the forefront of research focusing on the moderating effect of motives for reading customer articulations between different combinations of VPEs and SOVC.

5.3 Managerial implications

Steenkamp & Baumgartner [1992] posited that hedonic value is crucial to those consumers with high-OSL, and utilitarian value is important to those with low-OSL. The characteristics of OSL should provide manufacturers with various marketing strategies of VPEs to enhance brand-related SOVC and loyalty. Referring to this study's findings, one can reasonably conclude that, when a manufacturer induces a marketing strategy based on hedonic value, the manufacturer should offer high entertainment and high social interaction for high-OSL consumers, such as games, music, and interactive forums, and may enhance word-of-mouth advertising by developing virtual brand communities. Conversely, when a manufacturer induces a marketing strategy based on utilitarian value, the manufacturer should provide high escapism and high information interpersonal VPEs, such as recommended products on a forum site. Second, businesses now understand the powerful effects of e-WOM advertising on consumer satisfaction. Dai et al. [2014] claimed that consumer's previous shopping experiences are positively related to their purchase intentions for the two product categories (i.e. non-digital and digital products). That is, online shopping experience exerts a significant positive relationship with the intention to purchase, while product category plays a significant role in explaining online purchase intentions. If the product is the experience goods, it is difficult to judge the quality of product before making a purchase [Girard & Dion 2010; Nelson 1970, 1974]. Hence, consumers will rely on e-WOM when making their purchase decision. If that is the case, consumers have a high motivation to read customer articulations. Manufacturers should pursue high escapism including high information interpersonal VPEs (such as 3D product exhibitions, and editorial opinions in forums) to enhance consumers' SOVC. If the product is attributed to the search goods, consumers are inclined to lower their motivation to read customer articulations. Therefore, manufacturers should pursue high entertainment and information interpersonal VPEs (such as games, music, and editorial opinions in forums) to promote consumers' SOVC. In addition, if the product is a combined search with experience attributes, consumers have medium levels of motivations for reading customer articulations; in these cases, manufacturers should pursue high entertainment and social interpersonal VPEs (such as games, music, and peer-to-peer opinions in forums) to improve consumers' SOVC.

5.4 Limitations and future research

In terms of limitations, first, we note that Study 1 and Study 2 both emphasized on delivering short-term effects of involvement with SOVC. Future studies will benefit from investigating long-term effects of involvement. Additionally, to dispel the interference of the amount of information, in the current study, the combinations of different VPEs were set to the same amount of information. Therefore, the results may not be generalized to other websites. This study focused on a specific product, so future studies can focus on different products and conduct different comparisons. Furthermore, this study did not consider demographic variables and lifestyles. Subsequently, future research can further analyze the background and the characteristics of each consumer for their relationship management [Chen et al. 2007]. With the concept of OSL being similar to the shopping value [Babin et al. 1994], and measures of shopping value require a longer period of shopping-experience accumulation, future research could and should further investigate the interaction effects between VPEs and SOVC as well as examining the moderating role of shopping value. Finally, according to Ozok & Wei [2010], the differences in user's preferences between electronic and mobile commerce in consumer shopping could also be the future of the research setting.

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