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Influencing VSN users' purchase intentions

The roles of flow, trust and eWOM

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Abstract

Purpose – The purpose of this paper is to examine the characteristics of virtual social networks (VSNs) and to determine their salient attributes, including those that influence flow experience, trust and electronic word-of-mouth (eWOM) behaviors affecting users' purchase intentions, and to provide important strategic implications contributing to the Internet marketing literature.

Design/methodology/approach – Using a self-administered questionnaire, the data (n = 167) are collected from two Iranian Internet social networking sites, namely, *facenama.com* and *cloob.com*. Using LISREL 8.5, hypothesized relationships are examined through structural equation modeling (SEM) analysis.

Findings – According to the results of the study, despite all assumptions and studies to the contrary, eWOM behaviors in VSNs are derived from neither users' flow experience nor their trust in VSNs, but they are mostly caused by VSNs' attributes, from which four are investigated in this study, namely, communication and social relationships, entertainment, information disclosure and ease of use. Nevertheless, according to the results, VSN attributes also influence trust and flow experience, trust in a VSN environment influences users' flow experience and eWOM in VSNs has significant impact on users' purchase intentions. The findings also revealed that the level of education of a user affects how much he trusts the VSN environment.

Practical implications – The author examined flow experience, trust, eWOM behavior, purchase intentions and the VSNs' attributes to verify their relationships, providing a better understanding of an effective indirect marketing in VSNs. The results also have important implications for researchers.

Originality/value – While flow experience, trust, word-of-mouth (WOM) behaviors and purchase intentions have been separately studied in Web sites, e-shopping malls and blogs, little research has sought to identify the existence of these elements within VSNs, their correlations with one another and how they are affected by VSNs' attributes.

Keywords Virtual communities, Social networking sites, Consumer behavior, Viral Marketing, Consumer generated advertising, Word-of-mouth marketing

Paper type Research paper

1. Introduction

Mainstream print and broadcast media have faced major challenges in recent years, with many newspaper titles facing closure and television (TV) channels suffering

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shortfalls in revenue. Palmer and Koenig-Lewis (2009) state that audiences and their attention is shifting to online channels, as 52 per cent of Europeans are regularly online at home. Around 36 per cent of European Internet users watch less TV, 28 per cent have reduced their newspaper and magazine reading and 17 per cent have decreased listening to the radio since going online. This shift away from conventional media has been further exacerbated by the recession of 2008 which led many advertisers to cut their budgets, resulting in print and broadcast media receiving a diminishing share of the declining total budget (p. 165).

In addition to the Internet, the importance of virtual social networks (VSNs) is undeniable in today's life. According to Lai and Turban (2008), a social network (SN) is defined as a social structure comprised of nodes (individuals or organizations) that are connected by one or more specific types of relation/s, while online SNs are Web sites where people create their own virtual space (or home page), on which they post pictures, write blogs, share ideas and link to other Web locations which they find interesting. Therefore, a VSN is similar to a SN, except that it forms through an electronic communication medium and is not bound by space and time (p. 388).

The findings of Dunne *et al.* (2010) indicate that the participants are actively using VSNs for their own personal motives and gratifications in terms of presenting and managing a certain identity and persona in a social context (p. 46). Palmer and Koenig-Lewis (2009) report the existence of evidence demonstrating that social networking sites have become mainstream and that they globally account for one in every 11 minutes spent online with even higher figures in the UK – one in every six minutes (p. 165). They state that Web 2.0 presents a number of opportunities for companies to get close to their markets, including observing and collecting information and participating as members of online communities. According to the same source, companies would generally love their product to be at the heart of a community, and many companies have developed their own blogs and online forums for this purpose (p. 166). They state that 43 per cent of social networkers in Europe have visited a personal space of a brand and 16 per cent have already had a dialog or sent a message to a brand (Palmer and Koenig-Lewis, 2009; Microsoft Digital Advertising Solutions, 2007). They also note that 36 per cent of active Internet users thought more positively about companies that have blogs and 32 per cent trusted bloggers' opinion on products and services and that social networking and blogging sites are now more popular than e-mail as a means of social communication (p. 165). Therefore, according to Mascarenhas *et al.* (2004), regardless of industry, almost all companies are operating on faster evolutionary tracks and at greater risks than at any previous time (p. 486); there arises the question as to how can marketing benefit from this change in people's lifestyle.

Dahlén *et al.* (2009) describe advertising as an exchange between advertisers and consumers, where consumers give their time and cognitive effort and expect to receive something of value in return (p. 156). They mention that consumers are avoiding traditional advertising with increasing success, either with new technologies or mentally, screening out most advertising because its perceived baseline value is so low that they do not consider individual ads worth attending to (p. 156). Waller (1999) states that there is a risk that advertising efforts become more aggressive to break through consumers' defenses, and in so doing, raise their defenses even more (p. 289). According to Barreto's (2013) findings online ads attract less attention

levels than friends' recommendations because they are outside of the *F*-shaped visual pattern range and cause a state of "banner blindness" (p. 119). Thus, today's marketers are recommended to substitute direct marketing strategies for indirect ones such as "viral" marketing, in which, according to Ferguson (2008), "a message can be spread quickly from one person to a handful of friends, who each in turn inform a handful of their friends" (p. 179).

This study attempts to examine the elements affecting viral marketing and electronic word-of-mouth (eWOM) throughout VSNs. While a study in the field of word-of-mouth (WOM) and viral marketing via Internet is not considered groundbreaking, and while the antecedents and consequences of trust and flow experience and their impact on eWOM have already been separately studied, there is neither a research studying the effects of VSNs' attributes on these elements influencing users' purchase intentions, nor is there one comparing the impacts of these attributes, users' flow experience and their trust on users' desire to engage in WOM behavior. Consequently, we examine the correlations between the attributes of these networking sites with flow, trust and eWOM, and the potential influence each element can have on user's purchase intentions by analyzing two Iranian social networking sites, namely, *cloob.com* and *facenama.com*. The findings of this research will present practical implications in the area of modern marketing. The sales enhancement through encouragement of maximum positive eWOM among users of these networking sites is a case in point.

2. Theoretical background

2.1 Virtual social networks

Thelwall (2008) introduces social networking Web sites as those that "allow visitors to register and connect to each other in order to communicate or share resources reflecting offline relationships or new relationships formed online" (p. 728). Palmer and Koenig-Lewis (2009) mention that social networking sites allow individuals to construct a public or semi-public profile within a bounded system to articulate a list of other users with whom they share a connection and to view and traverse their list of connections and those made by others within the system (p. 165). According to them, on larger social networking sites, individuals are typically not looking to meet new people but are more interested in managing relationships by maintaining contacts with old friends who are already part of their extended SN (p. 165).

Although the topic of marketing within VSNs is moderately new and not many considerable studies have been done in this area, researchers point out several attributes for these networking sites among which four stand out; communication and social relationships, entertainment, information disclosure and ease of use. For instance, Lin (2006) mentions that virtual communities are expected to serve the needs of members for communication, information and entertainment (p. 540). Kwon and Wen (2010), Lin (2006) and Fetscherin and Lattemann (2008) consider "ease of use" one of the factors influencing users' participation in virtual communities. Joinson (2008) confirms seven applications for SNs, among which social connection and shared identities are noticeable (p. 1,031). According to Grabner-Kraüter (2009), entertainment is one of the reasons people join SNs and online communities (p. 508), and Soares *et al.* (2012) believe that SNs enable sharing of personal information and multimedia content with existing connections, status updates, discussions and

organization of events (p. 48). Perhaps using these four features for the sake of modern marketing can give companies a competitive advantage in today's marketing battlefield.

2.2 Flow

Palmer and Koenig-Lewis (2009) describe flow as an experiential state "so desirable that one wishes to replicate it as often as possible" (p. 170). According to Guo (2004), in this state, actions transit seamlessly into another, displaying an inner logic of their own, with the actor experiencing a smooth transition and total control of their actions without distraction (p. 11). Different researchers such as Guo (2004), Hausman and Siekpe (2009), Hoffman and Novak (2009) and Park *et al.* (2010) have introduced different dimensions for flow experience among which Guo's (2004) seems the most comprehensive. According to him, flow comprises seven dimensions; perceived control, time distortion, telepresence, loss of self-consciousness, concentration, mergence of awareness and activity and enjoyment (p. 48).

Although flow and its effects have been studied in Web sites and online shopping malls in previous studies, its existence in VSNs and its correlation with trust and eWOM has never been analyzed.

2.3 Trust

Liu *et al.* (2004) state that trust becomes all the more important in a high-tech environment (p. 129). Oh *et al.* (2012) defines trust as a sense of expectation formed by individuals or groups of individuals in combination with their beliefs and behavioral intentions, which, in turn, can lead to the tendency to rely on transaction counterparts who can be trusted and assessed (p. 309) According to Soares *et al.* (2012), trust can be defined as a belief or expectation that the trusted party is reliable and dependable (p. 48).

Grabner-Kraüter (2009) emphasizes that in the Web context, trust can refer to the Web site itself, the Web vendor or the Internet in general, and in the specific case of SNs, the objects of trust can be other network users, the social networking site and the Web 2.0 technology (p. 514). Soares *et al.* (2012) mention that trust reduces uncertainty and simplifies decision-making and personal, social and business relationships (p. 48).

Lu *et al.* (2010) divides trust into two distinct segments; trust in the Web site and trust in members. According to them, while trust in the Web site refers to the beliefs that the Web site or the virtual community sponsor is capable of providing quality services and would do good to its users, trust in members can be a major factor that affects the prosperity and success of virtual communities, as, in a virtual environment where participants are usually anonymous and do not engage in direct face-to-face communication, trust can be a significant issue (p. 348). They also mention that in virtual communities, trust plays an important role in affecting members' behavior, as people would act more proactively when they trust the environment and other people (p. 348).

On the other hand, Zhou (2012) and Lu *et al.* (2010) introduce three dimensions for trust: trust in the ability, trust in the integrity and trust in the benevolence. Nevertheless, Ridings *et al.* (2002) emphasize that in the concept of virtual communities, there are only two dimensions to trust; "ability" and "a combination of integrity and benevolence".

Their logic was that both integrity and benevolence lead to one type of behavior – maintaining conversations – in the virtual communities (p. 276).

In this study, we combine the aforementioned studies and introduce three dimensions to trust; trust in Web site, trust in users' ability and trust in users' integrity and benevolence.

2.4 Electronic word-of-mouth

Soares *et al.* (2012) introduce WOM as "personal communication about a brand, a product, or a service that is perceived as non-commercial" (p. 49). eWOM, on the other hand, is defined as:

> […] any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet by Hennig-Thurau *et al.* (2004) (p. 39).

Thus, as Soares *et al.* (2012) mention, eWOM is WOM termed in the Internet context (p. 49). While a typical WOM communication consists of spoken words exchanged with one friend or relative in a face-to-face situation, online WOM usually involves personal experiences and opinions transmitted through the written word. (Bickart and Schindler, 2001; Sun *et al.*, 2006).

The importance of WOM is growing as the usage of VSNs increases. Nowadays, a lot of researchers study WOM within virtual communities (Brown *et al.*, 2007; Kozinets *et al.*, 2010; Trusov *et al.*, 2009). According to Soares *et al.* (2012), WOM covers all forms of informal exchange of information regarding products and services by consumers. As the same source reports, this type of information is perceived as more reliable and impartial than forms of paid persuasive information, such as advertising, which are obviously controlled by companies (p. 49). Dahlén *et al.* (2009) state that non-traditional media enhance consumer-perceived value, leading to higher WOM and purchase (p. 155). According to Soares *et al.* (2012), the consumer-generated content nature and the ease and speed of information dissemination, including brand-related experiences, make SNs a powerful tool for eWOM, where consumers can spread their brand-related experiences and knowledge freely among peers (p. 49). Moreover, according to Goldsmith *et al.* (2013), prior active social media use and review posting predicts intention to post reviews on the new review Web sites (p. 100).

Okazaki (2012) emphasizes on valence and tie strength as the most important WOM aspects that have been examined. According to the same source, valence captures the nature of WOM messages, whether they are positive or negative; while negative WOM prevents the receiver from buying the product, positive WOM strongly recommends its purchase (p. 328). According to Sweeney *et al.* (2012), most WOM messages are very positive or very negative, and recent research suggests an equal impact across negative and positive WOM messages. Thus, message content may vary according to valence (p. 239). Okazaki (2012) introduces tie strength as "the intensity of the social relationship between consumers". According to him, people can receive WOM from friends and relatives (considered as strong ties) or from neighbors and acquaintances (cataloged as weak ties) (p. 328).

2.5 Purchase intention

Lu *et al.* (2010) state that rational consumer's purchase decision-making processes follow the three stages of requirement cognition, information gathering and the purchase behavior. They believe that today, virtual communities have profoundly changed consumers' purchase decision-making process. According to them, many people nowadays examine other consumers' reviews and experiences posted in virtual communities before purchasing new products. In this case, members engage in knowledge sharing to reduce their uncertainty prior to the consumption experience. Survey research shows that about 61.7 per cent of virtual community members consider other members' opinions before making purchase decisions and about 88 per cent of Web users gather product or service-related information before making purchases (p. 351). According to Lu *et al.* (2010), the example for this circumstance can be when a consumer who recognizes the need of a digital camera but who has no idea about which specific model to buy goes to a virtual community to obtain relevant product reviews and usage experiences from other consumers. In this information search process, he gradually refines his requirements and finally decides to buy a specific model by a particular manufacturer (p. 352).

3. Research model and hypotheses

Figure 1 presents the research model. The present study has chosen four generalized attributes of VSNs, namely, social relationships, entertainment, information disclosure and ease of use, and studies the effects of these attributes, in general, on concepts of flow, eWOM and trust. Moreover, trust is proposed to affect flow and both factors are to affect eWOM, which, in turn, affects purchase intention. Demographic variables comprising gender, age and education level are included into the model as control variables.

While Kwon and Wen (2010), Lin (2006) and Fetscherin and Lattemann (2008) consider ease of use as an element affecting users' participation in VSNs, Zhou's (2012) research confirms that ease of use is a factor affecting flow (p. 34). In addition, while

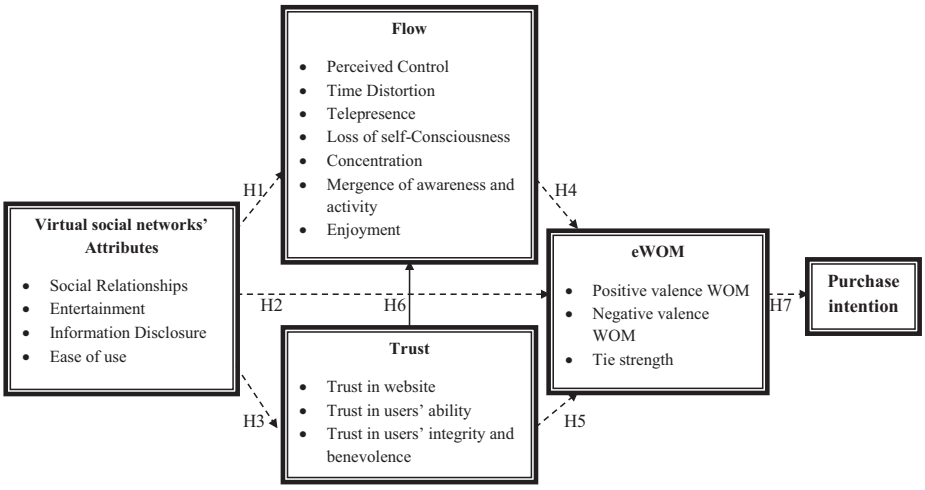


Figure 1.
Research model

according to Lin (2006) virtual communities are expected to serve the needs of members for communication, information and entertainment (p. 540), according to Grabner-Kraüter (2009), they are to serve the needs for entertainment (p. 508) and according to Soares *et al.* (2012) they are to serve the needs for sharing of personal information (p. 48); Hausman and Siekpe (2009) and Park *et al.* (2010) confirm the direct impact of entertainment and informativeness on flow. As people engage in entertaining activities or in exchanging information in a user-friendly environment, such as VSNs, they are more likely to lose their self-consciousness, lose track of time, feel focused and in control, forget about their immediate surroundings, enjoy and, in general, enter the state of flow. Thus, we propose:

H1. VSNs' attributes have a positive impact on flow.

As noted earlier, social connection is considered one of the applications of SNs by Joinson (2008) (p. 1,027), and according to Sun *et al.* (2006), who studied the antecedents and consequences of online WOM in the context of music-related communication, and Soares *et al.* (2012), who studied the impact of social interactions on marketing interactions within SNs, social relationships have a positive impact on WOM. As people have more social interactions in VSNs, they are more likely to exchange information or ideas about products or services. Thus, we propose:

H2. VSNs' attributes have a positive impact on eWOM.

While ease of use is considered an attribute of VSNs (Kwon and Wen, 2010; Lin, 2006; Fetscherin and Lattemann, 2008), Zhou (2012), Vance *et al.* (2008) and Benamati *et al.* (2010) show that it has an impact on trust. According to Soares *et al.* (2012) SNs are based on a process of sharing contents, ideas, photos, music and so on. Sharing implies trust, "an important social lubricant for cooperative behavior" (p. 47).

Moreover, Joinson (2008) mentions that social connection is considered one of the applications of SNs (p. 1,031), and according to Lu *et al.* (2010), familiarity through social connection increases trust (p. 350). Lu *et al.* (2010) also mention:

> […] when an individual interacts with others in a virtual community, she becomes familiar with at least the IDs or writing styles of those who participate frequently. He may evaluate the trustworthiness of these members by judging the consistency of their messages and behaviors. Accordingly, familiarity with other members in virtual communities should increase the trust in members because a higher familiarity implies a larger amount of accumulated knowledge derived from experiences during previous successful interactions (p. 350).

Thus, we propose:

H3. VSNs' attributes have a positive impact on trust.

While flow is described as an experiential state "so desirable that one wishes to replicate it as often as possible" by Palmer and Koenig-Lewis (2009), (p. 170), according to O'Cass and Carlson's (2010) research which studies Web-induced flow, it holds a considerable impact on WOM within professional sporting team Web sites (p. 125). In the case of experiencing flow, the user finds himself in a state of deep concentration and control, loses his self-consciousness, loses track of time, forgets about his immediate surroundings and enjoys his time in the VSN. He is thus very likely to start exchanging information about products and services with his peers; a behavior which is also known as WOM. Thus, we propose:

H4. Flow has a positive impact on eWOM in VSNs.

Soares *et al.* (2012) state that trust has an impact on WOM and on the exchange of information about products and services (p. 58). According to them, with the assumption of information's trustworthiness in SNs, as they come from those who have already used the product or service and are known to the users, the likelihood of engaging in WOM behavior increases (p. 58). Kassim and Abdullah's (2010) work confirms this impact (p. 363) and Ridings *et al.* (2002) reveal that trust in members increases the tendency to exchange information in virtual communities considerably (p. 287). According to Smith and Adviser-Menon (2002), trust among users increases the tendency to accept future recommendations from their peers. Therefore, when a user recommends a seller or supplier with a good reputation in a virtual community, when other users have a higher level of trust in him, it's more likely for them to believe and accept the information. Kankanhalli *et al.* (2005) prove that public trust affects information sharing via electronic sources (p. 140), and Lu *et al.* (2010) emphasize that trust in Web site's ability has a positive impact on intention to get information and to purchase (p. 346). Thus, we propose:

H5. Trust has a positive impact on eWOM in VSNs.

According to Zhou's (2012) research, trust has a considerable effect on flow in mobile banking (p. 33). This effect can also be applied to VSNs. The probability of users' experiencing flow in VSNs will escalate, provided they trust the social networking Web site and other users' abilities, benevolence and integrity. Thus, we propose:

H6. Trust has a positive impact on flow in VSNs.

According to Soares *et al.* (2012), "Online communities possess potential ability to influence consumer behavior, namely sales, through electronic word of mouth". They also mention that WOM has an important role in consumer decisions and may have an important role in all stages of the consumer buying decision process, from need recognition to post-purchase evaluation. They also emphasize that the importance of WOM is enhanced as traditional forms of communication, such as advertising, loses effectiveness, as consumers are overwhelmed with information of a commercial nature (p, 49). Thus, we propose:

H7. eWOM has a positive impact on purchase intentions in VSNs.

4. Methodology

4.1 Sample and data collection

The questionnaire was designed to measure the correlation among VSNs' attributes, users' trust and flow experience, level of engagement in eWOM and users' purchase intentions. All the factors except purchase intention are second-order factors measured with multiple items. All items were adapted from extant literature to improve content validity which was further improved through several procedures comprising a pre-test. A structured questionnaire was designed and the questions were first translated into Farsi and then were pre-tested with academics that helped clarify ambiguous questions. The comments and suggestions were taken into account in the final version of the questionnaire. All items were measured with a seven-Likert scale ranging from strongly disagree (1) to strongly agree (7).

By conducting a pre-test among 40 users and through data analysis via SPSS, the statistical sample was determined using Cochran formula and 167 subjects were selected through probability sampling. The data were collected from users of two known VSNs in Iran, namely, *cloob.com* and *facenama.com*, via Internet. Due to the filtering of VSNs in Iran, not many alternatives were available without putting authors in a politically hazardous situation; users were randomly contacted by email and were asked to fill out the questionnaires based on their usage experience, and from the 500 distributed questionnaires, 167 valid responses, comprising 71.3 per cent from females and 28.7 per cent from males, were collected.

Table I lists the demographic information of the sample. We tested the effects of these demographic variables including gender, age and education on VSNs' attributes, trust, flow, eWOM and purchase intention. The results indicated that except the effect of education on trust ($p = 0.009 < 0.05$), other path coefficients are insignificant. This suggests that the level of education affects the feeling of trustworthiness in VSNs. The analysis shows that the more educated a user is, the less he trusts a VSN environment.

4.2 Data analysis and results

We mainly used LISREL 8.5 and SPSS 19 to conduct data analysis, which included two steps; first, the measurement model was examined to test reliability and validity. Then, the structural model was examined to test research hypotheses and model fitness (Anderson and Gerbing, 1988). First of all, a confirmatory factor analysis (CFA) was conducted to examine the measurement model and test the reliability and validity. Composite reliability represents the shared variance among a set of observed variables measuring an underlying construct (Fornell and Larcker, 1981). As shown in Table II, all composite reliability values and Cronbach's alpha coefficients exceed the 0.7, most constructs are > 0.84, evidencing a good level of internal consistency in the responses (Nunnally and Bernstein, 1994) Similarly, the

Total valid responses	Option	167 Count	Percentage
VSN used	*cloob.com*	138	82.6
	facenama.com	29	17.4
Gender	Male	48	28.7
	Female	119	71.3
Age (years)	16-20	12	7.2
	21-25	47	28.1
	26-30	59	35.3
	31-35	25	15
	36-40	11	6.6
	41-45	4	2.4
	46-50	2	1.2
	> 50	7	4.2
Education	High school or below	24	14.4
	Bachelor's degree	78	46.7
	Master's degree	52	31.1
	PhD	13	7.8

Table I.
The demographic information of the sample

Table II.
Summary of statistics

Items for each construct	Factor loading (λ)	Adapted from	*t*-value	Alpha
VSNs' attributes				0.736
Social Relationships (SR)		Soares *et al.* (2012)		
Using SNs improves my social life performance (I interact more often, get better updated, keep social relationships stronger)	0.79*		10.06	
Using SNs gives me greater control over my social interactions	0.84*		11.15	
Using SNs improves the quality of my social relationships	0.90*		12.58	
Using SNs enhances my effectiveness in maintaining my social relationships	0.93*		13.3	
Using SNs makes it easier to maintain my social relationships	0.95*		13.82	
Overall, I find using SNs useful in my social life	0.83*		11.04	
Entertainment-seeking motivation (ESM)		Park *et al.* (2010)		
Using this Web site is truly a joy	0.73*		9.09	
Information disclosure (ID)		Soares *et al.* (2012)		
Getting updated information from the company	0.56*		6.2	
Getting some attractive offers	0.50*		5.33	
Getting my questions answered	0.51*		5.46	
Ease of use (EOU)		Kassim and Abdullah (2010)		
The site is user friendly	0.57*		6.43	
Flow				0.849
Perceived control (C) During my last visit to the Web site [. . .]		Guo (2004)		
I felt calm	0.64*		7.60	
Time distortion (TD)		Guo (2004)		
Time appears to go by very quickly when I am using the Web	0.71*		8.77	
Sometimes I lose track of time when I am using the Web	0.84*		11.27	
Most times when I get on to the Web, I end up spending more time that I had planned	0.89*		12.54	
Time flew when I was using the Web	0.84*		11.29	
I often spend more time on the Web than I had intended	0.77*		9.94	
Telepresence (TEL)		Guo (2004)		
I forget about my immediate surroundings when I use the web	0.86*		11.9	
The world generated by Web site seemed to me "somewhere I visited" rather than "something I saw"	0.77*		9.96	

(*continued*)

Table II.

Items for each construct	Factor loading (λ)	Adapted from	*t*-value	Alpha
After using the Web, I feel like I come back to the "real world" after a journey	0.90*		12.72	
When using the Web, I feel like I am in a world created by the Web site	0.92*		13.2	
Using the Web creates a new world for me, and this world suddenly disappears when I stop browsing	0.90*		12.71	
When using the Web, my body is in the room, but my mind is inside the world created by the Web site I visit	0.91*		12.85	
I felt I was more in the world generated by the Web site than the "real world"	0.88*		12.2	
I forgot that I was in the middle of an experiment	0.84*		11.28	
Loss of self-consciousness (LSC)		Guo (2004)		
During my visit to the Web site [. . .]				
I kind of forgot about myself	0.86*		11.71	
I lost the consciousness of my identity and felt like "melted" into the site	0.92*		13.21	
Concentration (CONC)		Guo (2004)		
During my last visit to the Web site [. . .]				
I was absorbed intensely in the activity	0.74*		9.42	
My attention was focused on the activity	0.87*		12.12	
I was deeply engrossed in the activity	0.97*		14.46	
Mergence of awareness and activity (M)		Guo (2004)		
During my visit to the Web site [. . .]				
It seemed my interaction with the Web sites was seamless	0.51*		5.6	
I felt I was just reacting to the Web site without thinking	0.61*		7.2	
Enjoyment (E)		Guo (2004)		
During my last visit to the Web site [. . .]				
I found my visit interesting	0.65*		7.73	
I found my visit enjoyable	0.56*		6.32	
I found my visit exciting	0.68*		8.31	

(*continued*)

Table II.

Items for each construct	Factor loading (λ)	Adapted from	*t*-value	Alpha
I found my visit fun	0.59*		6.82	
Trust				0.860
Trust in Web site (TW)		Oh *et al.* (2012)		
I think that this Web site is trustworthy	0.75*		11.42	
This Web site keeps its commitments	0.74*		11.31	
This Web site keeps users' best interest in mind	0.74*		11.24	
This Web site would do the job right even when not monitored	0.68*		9.98	
I trust this Web site	0.81*		12.37	
Trust in users' ability (ABI)		Lu *et al.* (2010)		
I feel very confident about the skills that the other users in the site have in relation to the topics we discuss	0.78*		12.15	
The other participants on the site have much knowledge about the subject we discuss	0.76*		11.78	
The other participants on the site have specialized capabilities that can add to the conversation in this community	0.79*		12.48	
The other participants on the site are well qualified in the topics we discuss	0.81*		12.33	
Trust in users' integrity and benevolence (INB)		Lu *et al.* (2010)		
The other participants in the site would not knowingly do anything to disrupt the conversation	0.72*		10.33	
The participants in the site are concerned about what is important to others	0.68*		10.11	
The participants in the site will do everything within their capacity to help others	0.77*		12.02	
eWOM				0.848
Positive valence WOM (PV)		Goyette *et al.* (2010)		
I have recommended companies or products in this site	0.75*		11.52	
I speak of a company or product's good sides in this site	0.82*		13.17	
I am proud to say to others that I am a company or product's customer in this site	0.75*		11.59	
I strongly recommend people to buy some products from a company in this site	0.80*		12.78	

(*continued*)

Table II.

Items for each construct	Factor loading (λ)	Adapted from	*t*-value	Alpha
I mostly say positive things about a company or product to others in this site	0.78*		12.24	
I have spoken favorably of a company or product to others in this site	0.91*		15.44	
Negative valence WOM (NV)		Goyette *et al.* (2010); Kuan and Bock (2007)		
I mostly say negative things about a company or product to others in this site	0.67*		9.81	
I have spoken unflatteringly of a company or product to others in this site	0.72*		10.9	
My referral sources discourage me from purchasing from a product or brand	0.68*		10.03	
My referral sources suggest that I purchase from other products or brands instead of what was in my mind	0.74*		11.27	
My referral sources share with me their negative opinions of purchasing from a product or brand	0.73*		11.05	
Tie strength (TS)		Bansal and Voyer (2000)		
I have a close relationship with others in this Web site	0.57*		8.12	
It is likely that I share a personal confidence with someone in this Web site	0.58*		8.27	
It is likely that I extend an everyday assistance in this Web site	0.65*		9.59	
It is likely that I spend my free time with some users of the Web site	0.52*		7.18	
Purchase intentions (PI)		Hausman and Siekpe (2009)		0.870
I will definitely buy products recommended in this Web site in the near future	0.77*		11.84	
I intend to purchase a product recommended in this Web site in the near future	0.96*		16.78	
It is likely that I will purchase a product recommended in this Web site in the near future	0.88*		14.53	

Note: $*p < 0.01$

average variance extracted (AVE) for all constructs are satisfactory (> 0.50) (Bagozzi and Yi, 1988).

The standardized loadings and their associated *t*-values were also examined. Validity includes convergent validity and discriminant validity. Convergent validity measures whether items can effectively reflect their corresponding factor, whereas discriminant validity measures whether two factors are statistically different (Zhou, 2012). Convergent validity is revealed by the large and significant standardized loadings ($t > 1.96$; $p < 0.01$). Discriminant validity was supported based on the comparison between AVE of each pair of constructs and Φ^2 (i.e. the squared correlation between two constructs). Φ^2 did not exceed AVE between each pair of constructs, and therefore, discriminant validity was obtained (Table III – correlation matrix).

Kolmogorov-Smirnov test (K-S test) is also used for testing the normality of the distribution. According to the results (Table IV – K-S test), *p*-value is > 0.05 for all the variables, showing a normal distribution.

We have also conducted Kaiser-Meyer-Olkin (KMO) and Bartlett's test measuring the sampling adequacy which should be > 0.5 for a satisfactory factor analysis to proceed. Looking at Table V, the KMO measure is 0.821. From the same table, we can see that in Bartlett's test of sphericity, the observed significance level is 0.0000, showing that the relationships among variables are strong.

Based on the analysis, we can conclude that most constructs have adequate measurement properties. Having examined the construct validity and the reliability of the measurement model, the next step is to assess whether the structural model supports the proposed theoretical model.

Thus, SEM software LISREL 8.5 is adopted to estimate the structural model. Table VI lists the path coefficients and their significance and as can be seen in

	Mean	SD	VSNA	Flow	Trust	eWOM	PI
VSNA	4.57	0.71	*0.57*	0.42	0.46	0.29	0.21
Flow	4.09	0.95	0.65*	*0.63*	0.36	0.18	0.14
Trust	3.69	1.09	0.68*	0.60*	*0.57*	0.14	0.10
eWOM	2.68	1	0.54*	0.43*	0.38*	*0.52*	0.46
PI	2.82	1.39	0.46*	0.37*	0.32*	0.68*	*0.77*

Notes: PI = purchase intention; VSNA = virtual social networks' Attributes; eWOM = electronic word-of-mouth; SD = standard deviation; *correlation is significant at the 0.01 level; $p < 0.01$; the diagonal italic numbers represent the AVE, where the lower diagonal area represents the correlation between each construct and the upper area represents Φ^2

Table III.
Correlation matrix

	K-S's Z	*p*-value
VSNA	0.568	0.904
Flow	0.933	0.349
Trust	0.817	0.517
eWOM	0.872	0.432
PI	1.681	0.057

Table IV.
K-S test

Table VII, which lists the recommended and actual values of some fit indices; all fit indices have better actual values than the recommended values, demonstrating a good fitness.

5. Discussion

As is shown in Figure 2, except *H4* and *H5*, other hypotheses were supported. The results indicate that VSNs' attributes affect flow, trust and eWOM, trust affects flow and eWOM affects users' purchase intentions. What the results don't support is *H4* with $\gamma = 0.15$, stating "*Flow has a positive impact on eWOM in VSNs*", which is contradictory to the research conducted by O'Cass and Carlson (2010) in the area of professional sporting team Web sites (p. 125). This contradiction resides in the different nature of VSN environments and professional sporting team Web sites.

Moreover, *H5* stating "*Trust has a positive impact on eWOM in VSNs*" is not supported ($\gamma = -0.03$), which is also contradictory to the research conducted by Soares *et al.* (2012) in the area of SNs, Kassim and Abdullah (2010) in the area of e-commerce, Lu *et al.* (2010), Ridings *et al.* (2002) and Smith and Adviser-Menon (2002) in the area of virtual communities and Kankanhalli *et al.* (2005) in the area of electronic knowledge repositories. While the difference in our results with those of works by Soares *et al.* (2012), Lu *et al.* (2010), Ridings *et al.* (2002) and Smith and Adviser-Menon (2002) may reside in the difference between Iranian VSN users' tendencies toward engaging in

Table V.
KMO test

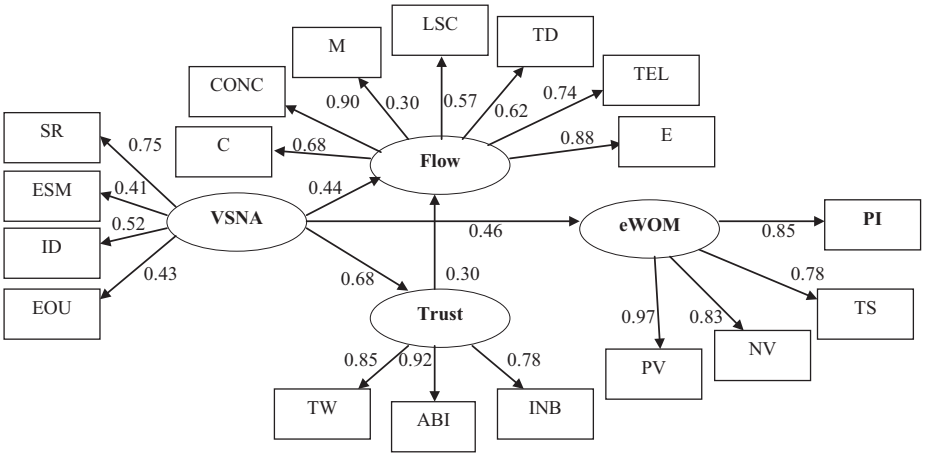
KMO measure of sampling adequacy		0.821
Bartlett's test of sphericity	Approximately χ^2	11094.27
	df	4005
	Significance	0.000

Table VI.
Path coefficients and their significance

Hypothesis	Path	Coefficient	SE	*t*-value	Approved or not
H1	VSNA →Flow	0.44	0.11	3.98	Supported
H2	VSNA →eWOM	0.46	0.14	3.38	Supported
H3	VSNA →Trust	0.48	0.085	7.95	Supported
H4	Flow → eWOM	0.15	0.11	1.43	Not supported
H5	Trust → eWOM	−0.03	0.11	−0.23	Not supported
H6	Trust → Flow	0.30	0.11	2.84	Supported
H7	eWOM → PI	0.85	0.077	11.02	Supported

Table VII.
Fit indices for the measurement models

Fit indices		Recommended value	Measurement model
χ^2/df	($\chi^2 = 523.00$, df = 202)	≤3	2.589
Root mean square error of approximation (RMSEA)		≤0.08	0.000
Goodness of fit index (GFI)		≥0.90	1.00
Adjusted for df (AGFI)		≥0.85	1.01
Comparative fit index (CFI)		≥0.90	1.00
Incremental fit index (IFI)		≥0.90	1.01



Notes: ESM = entertainment-seeking motivation; SR = social relationships; ID = information disclosure; EOU = ease of use; C = perceived control; TD = time distortion; TEL = telepresence; LSC = loss of self-consciousness; CONC = concentration; M = mergence of awareness and activity; E = enjoyment; TW = trust in website; ABI = trust in users' ability; INB = trust in users' integrity and benevolence; PV = positive valence WOM; NV = negative valence WOM; TS = tie strength; PI = purchase intentions

Figure 2.
The empirically supported model

WOM behaviors and other nationalities users, the difference in our results with Kassim and Abdullah (2010) and Kankanhalli *et al.*'s (2005) work resides in the difference between the nature of a VSN environment and an e-shopping mall or an electronic knowledge repository.

What's more, the existence of the noted attributes, such as social relationships, entertainment, information disclosure and ease of use in VSNs, the strongest of which is social relationships with $\gamma = 0.75$, is confirmed. Although *H1*, *H2* and *H3* are all supported, it can be seen that VSNs' attributes have a stronger effect on trust ($\gamma = 0.68$) than they do on flow ($\gamma = 0.44$) or on eWOM ($\gamma = 0.46$).

The loadings of the seven dimensions of flow proposed by Guo (2004), namely, perceived control, time distortion, telepresence, loss of self-consciousness, concentration, mergence of awareness and activity and enjoyment on the second-order factor of flow experience were found to be (γ) 0.68, 0.62, 0.74, 0.57, 0.90, 0.30, 0.88, respectively. The *t*-values show that these loadings are significant. Concentration has the highest loading on flow ($\gamma = 0.90$), whereas mergence of awareness and activity has the least loading ($\gamma = 0.30$). Therefore, concentration is the most important component of VSNs. It can be explained through people's interest in their activities in these Web sites.

Also, trust as a second-order factor includes three dimensions: trust in Web site, trust in users' ability and trust in users' integrity and benevolence. Trust in users' ability has proved a greater influence ($\gamma = 0.92$) on users' trust in VSNs than trust in Web site ($\gamma = 0.85$) or in users' integrity and benevolence ($\gamma = 0.78$), though all three factors show a rather strong effect.

What's more, the high loadings of the three dimensions of eWOM, namely, positive valence eWOM, negative valence eWOM and tie strength, on the second-order factor of eWOM is confirmed, demonstrating the true nature of eWOM in VSNs. The results support that the closeness of relationship among VSNs' users strongly affects eWOM due to the high loading on tie strength ($\gamma = 0.78$). Moreover, the influence of positive valence eWOM ($\gamma = 0.97$) is shown to be extremely strong and moderately higher than the influence of negative valence eWOM ($\gamma = 0.83$) which is consistent with the findings of East *et al.* (2007), which report that negative WOM is less frequent than positive WOM by a factor of about 1-3, and Sweeney *et al.* (2012), which report that WOM receivers appear less influenced by negative WOM than positive WOM.

In addition, trust is confirmed to have an impact, though not strong, on flow with the loading of $\gamma = 0.30$ supporting *H6*. This finding is consistent with Zhou's (2012) research in the area of mobile banking (p. 33). Furthermore, the high loading of eWOM on purchase intention ($\gamma = 0.85$) supports the last hypothesis (*H7*), confirming Soares *et al.*'s (2012) work which also emphasizes this strong impact (p. 57).

The quantitative results presented here make a theoretical contribution by providing evidence that WOM behavior in VSNs which affects users' purchase intentions is mostly affected by the nature of these Web sites and not by users' flow experience or their trust in VSN Web sites, other users' ability or their integrity and benevolence. This extends previous research of WOM behavior in Web logs or e-shopping malls.

6. Theoretical and managerial implications

From a theoretical perspective, this research has examined VSNs' influence on users' purchase intentions through eWOM with respect to flow experience and trust. Overall, the study validates the proposed model and supports five out of the seven hypotheses.

As mentioned earlier, the broad spectrum of studies, such as those conducted by Zhou (2012), Soares *et al.* (2012), Zhou *et al.* (2010), Lu *et al.* (2010), Park *et al.* (2010), Kassim and Abdullah (2010), O'Cass and Carlson (2010), Hausman and Siekpe (2009), Grabner-Kraüter (2009), Joinson (2008), Kankanhalli *et al.* (2005), Ridings *et al.* (2002) and Smith and Adviser-Menon (2002), analyzes VSNs, flow, trust, WOM and purchase intentions separately. However, none of the aforementioned studies has aggregated all the elements in one model, considering each as a second-order factor.

Regarding the proposed nomological model, the findings supported the argument that VSNs' attributes affect users' flow experience (supporting *H1*), trust (supporting *H3*) and their engagement in eWOM (supporting *H2*) and that the latter influences users' purchase intentions (supporting *H7*). Although the effect of trust on flow in VSNs was also supported (supporting *H6*), the impacts of flow and trust on eWOM were not supported (*H4* and *H5*). In addition, according to the results, all three kinds of trust, namely, trust in Web site, trust in users ability and trust in users' integrity and benevolence, have high loadings on VSNs users' trust, all seven dimensions of flow, namely, perceived control, time distortion, telepresence, loss of self-consciousness, concentration, mergence of awareness and activity and enjoyment, have high loadings on users' flow experience and the strong tie among VSNs' users, positive valence eWOM and negative valence eWOM all have high loadings on users' engagement in eWOM.

Pitta and Laric (2004) state that marketing recognizes the vital process of satisfying customer wants and marketing management recommends the activities that will facilitate this process (p. 451). From a managerial perspective, this research advances marketers' understanding of VSNs' eWOM marketing. We feel that the novelty of the idea of eWOM and virtual viral marketing and the fear of the unknown in VSNs prevents further use of this type of marketing. This research is aimed at providing marketers with new insight into online viral marketing, stimulating the exploitation of full marketing potential residing in VSNs.

According to the results, marketers can benefit from the strong impact of tie strength, which according to Bansal and Voyer (2000) when is strong between the sender and the receiver, the given information has a significant influence on the receiver's purchase decisions (p. 175). They can also benefit from the positive valence eWOM in VSNs for the sake of viral marketing while taking precautions against negative valence eWOM. The confirmation of the impact of the strong tie existing in VSNs on eWOM can provide marketers with the knowledge that in VSNs both positive and negative comments one receives about services and products can strongly affect their judgment and purchase intentions. Having said that, the positive valence eWOM's impact's outweighing the negative valence eWOM's assures marketers that although there might exist negative opinions about their products and services in VSNs, the impact of these comments on the receiver will not be as strong as the impact of positive comments.

Furthermore, marketers must take into account the fact that the users' engagement in eWOM is higher in VSNs in which exists a higher degree of social relationships, entertainment, information disclosure and ease of use. Because the four VSNs' attributes examined above show a noticeable impact on users' engagement in eWOM about brands, products and services, VSNs which provide these four attributes at a higher level must be targeted by marketing managers for the sake of viral marketing.

Incidentally, as noted earlier, flow and trust are confirmed not to have influence on eWOM. Having said that, however, this absence of influence doesn't mean that marketers should neglect the impacts of flow and trust in their marketing activities. Other types of marketing such as banners can be used to benefit from the high state of flow and trust existing in VSNs environments, though the effects on each type of advertisement are yet to be studied.

7. Conclusions

Since VSNs have recently been introduced to the communication world, the change in the long-established marketing traditions is yet to come. Thus, it is necessary to identify the factors affecting users' motivations in engaging in eWOM throughout these Web sites. Integrating trust and flow theories, this research examined factors affecting users' engagement in eWOM in VSNs. First, it was proposed that flow and trust in VSNs have an impact on eWOM. This proposition was not supported according to the results which indicated that though VSNs' attributes have an impact on flow and trust and are the main factors affecting eWOM, flow and trust demonstrate no impact on it. Trust affects flow experience and eWOM strongly affects users' purchase intentions. Consequently, marketers should take eWOM into consideration when they want to affect users' purchase intentions and need to pay close attention to VSNs' attributes, provided they

wish to use eWOM in their marketing campaigns, keeping in mind that neither flow nor trust has any effects on eWOM.

8. Limitations and future research

This research has the following limitations; first, we collected data from Iranian VSNs, where social networking is developing rapidly but is still in its infancy. Thus, our results need to be generalized to international VSNs.

Second, besides the four attributes mentioned about VSNs, namely, social relationships, entertainment, information disclosure and ease of use, and the two elements of flow and trust, the effects of which weren't supported by the results; there might exist other elements affecting eWOM such as site homophily, receivers perceived risk, structural assurance and ubiquity, the impacts of which are yet to be studied.

Third, we mainly conducted a cross-sectional study. Conducting longitudinal research may provide more insights into the topic.

Finally, four of the attributes of VSNs and their effects on eWOM behavior are studied in this research; for empirical future studies, we suggest researchers to examine other VSNs' attributes and their effects on eWOM in these Web sites. Moreover, while this cross-sectional study examines eWOM behavior's antecedents and consequences in VSNs, researchers are urged to consider extending this research to a longitude which provides more insights on user behavior development.

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