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## Article

# Effect of social identity on the generation of electronic word-of-mouth (eWOM) on Facebook

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*Suggested Citation:* González-Soriano, Franklin Javier; Feldman, Percy Samuel Marquina; Rodríguez-Camacho, Javier Alejandro; Wright, Len Tiu (2020) : Effect of social identity on the generation of electronic word-of-mouth (eWOM) on Facebook, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 7, Iss. 1, pp. 1-15, <https://doi.org/10.1080/23311975.2020.1738201>

This Version is available at:

<https://hdl.handle.net/10419/244811>

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To cite this article: Franklin Javier González-Soriano, Percy Samuel Marquina Feldman & Javier Alejandro Rodríguez-Camacho | (2020) Effect of social identity on the generation of electronic word-of-mouth (eWOM) on Facebook, Cogent Business & Management, 7:1, 1738201, DOI: [10.1080/23311975.2020.1738201](https://doi.org/10.1080/23311975.2020.1738201)

To link to this article: <https://doi.org/10.1080/23311975.2020.1738201>



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Received: 27 December 2019  
Accepted: 24 February 2020

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Reviewing editor:  
Len Tiu Wright, De Montfort University Faculty of Business and Law, UK

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## MARKETING | RESEARCH ARTICLE

# Effect of social identity on the generation of electronic word-of-mouth (eWOM) on Facebook

Franklin Javier González-Soriano<sup>1,2\*</sup>, Percy Samuel Marquina Feldman<sup>1,2</sup> and Javier Alejandro Rodríguez-Camacho<sup>3</sup>

**Abstract:** This study examines how social identity affects the generation of electronic word-of-mouth (eWOM). We develop a structural equation model (SEM) comprising self-enhancement, social capital, and social presence as explanatory variables of social identity. We propose that, through these variables, the social identity construct has a positive relation with eWOM and its generation on social media. We analyze this effect by empirically estimating the model using data obtained from Ecuadorian university students and test the relation between social identity and the generation of purchase experience comments on social media. We analyze the effect of each variable on the generation of purchase experience comments on Facebook. Our results confirm the influence of social identity on the generation of eWOM, showing that social capital is an important variable in this process.

**Subjects:** Marketing; Social Media; Digital Marketing

**Keywords:** electronic word-of-mouth; social identity; social presence; self-enhancement; social capital

**JEL Classifications:** C12; C38; D91; M31; M37



Franklin Javier González-Soriano

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## PUBLIC INTEREST STATEMENT

This study highlights the role Facebook users can play when engaging with their friends and acquaintances by commenting on their past purchase experiences. In particular, we want to understand what motivates users to share such experiences. Our analysis focuses on self-enhancement, social capital, and social presence as motivating factors for such behavior, framed by the theory of social identity. We build and test a model using data drawn from university students in Ecuador. We find that the desire to provide relevant information regarding consumption within a virtual community is a factor that promotes the generation of Facebook comments. Thus, this study recommends that companies should design strategies that encourage the generation of comments that users will consider informative and relevant.

## 1. Introduction

Most firms and brands try to target customers via social media, using them to pursue advertising campaigns and to broadcast many types of messages (H. Lim & Kumar, 2018). According to Wang et al. (2019), most brands use a minimum of two social networks to interact with their customers. However, the importance of social media goes beyond their use as a platform for publicity. Posts made by common users regarding their shopping experiences can have a great impact on firms and consumer attitudes towards their products. For instance, tweets of complaint by airline passengers that become viral can affect the image of the airline. Social media have become an integral part of a firm's presence in the market and its interactions with potential customers, as well as information exchange among users.

Social media have become preeminent as a space wherein consumers exchange views about their shopping experiences. In the last decade, social media have evolved from a space where users meet people and share experiences and information with friends and family into a forum wherein consumers comment on the products and services they purchase (Wang et al., 2019; Yang et al., 2018). It is estimated that customers post several million comments about products or services every day (Demiray & Burnaz, 2019). These comments increasingly affect the shopping decisions of those who read them. Among the many studies on this influence, Yahia et al. (2018) analyze the impact of user opinions regarding their experience with new products, finding that the content generated by users can play a more significant role in the shopping decisions of others than the content generated by the company.

This study focused on Facebook because it is currently the main means for the propagation of comments on product and service consumption (Aghakhani et al., 2018). Facebook is estimated to have around 1.49 billion active users daily, generating around 4 million posts and 1 million comments every minute (K. Smith, 2019), which confirms the importance of this social network for this study.

In light of this evidence, scholars and practitioners have been interested in studying which factors motivate consumers to comment on their shopping experience in social networks (Lim & Kumar, 2018; Olof & Grundén, 2014). In the marketing literature, this line of research is included in studies on electronic word-of-mouth (eWOM), which is the process of posting comments on perceptions about a product or service through various electronic means (Hennig-Thurau et al., 2004).

People who purchase a good or service tend to share views about their experience with others in order to express their feelings of satisfaction or frustration (Jin, 2018; M. Sun, 2012). These comments influence the purchase decisions of those who receive such messages (Phua et al., 2017; Tien et al., 2019).

Contemplating social identity as a factor generating eWOM is important because the identification of individuals with their social environment plays a role in the face-to-face generation of WOM (Sanz-Blas et al., 2019). Social media offer users an ideal context in which to express their need for belonging (Borges-Tiago et al., 2019); this helps construct consumers' social identity (Sernovitz, 2012) and allows them to meet the needs for self-definition and relationship with other members of their group (Hajli, 2018). Thus, analyzing the social identity construct and its constitutive variables is important when studying users' comments on individual experiences and the formation of links with social groups.

Few studies have examined the manner in which individuals identify with different social groups and recognize themselves as being part of them while sharing their experiences and opinions through eWOM (Bilgihan et al., 2014; Demiray & Burnaz, 2019). No study has investigated the effect of the social identity construct on eWOM or considered how self-enhancement, capital, and social presence variables impact eWOM generation via social media.

This study draws from the conceptual model of Langner et al. (2013), which investigates the relationship among self-enhancement, capital, and social presence, the three factors that constitute social identity, in the traditional WOM environment. This study evaluates these variables in

order to determine the role each one plays in the generation of eWOM. These constructive variables, widely validated in the case of traditional WOM, should be found equally relevant in the electronic social network context, as is suggested by a number of studies that have analyzed some or several of these variables in the context of eWOM.

This study contributes to the literature by confirming that social capital is the dominant factor in social identity, which motivates social network users to generate comments about their product purchase experiences.

The study also helps close the knowledge gap through its joint analysis of the three variables that make up social identity in social networks, which had previously been tested in different contexts. The results highlight that, when the variables are analyzed together, their impact on the generation of eWOM is absorbed entirely by social capital.

## **2. Theoretical framework and hypotheses development**

### **2.1. Social identity theory**

When applied to marketing, the theory of social identity proposes that individuals belonging to a group express their opinions and generate comments based on their experiences of purchasing and using products or services, thus contributing to the generation of community knowledge and influencing the consuming decisions of the community members (Evans, 2014; B. Kim & Kim, 2019). This definition applies in both face-to-face and electronic contexts.

Social media provide users with a space in which they can share diverse experiences with products or services (Chang, 2015). Therefore, it is reasonable to consider that social media play a role in the construction of a consumer's identity, articulating the self-enhancement and generation of social capital through the experiences shared in such forums (Cui et al., 2019; Moore & McElroy, 2012; Sernovitz, 2012). However, the fact that these comments are posted remotely, which disseminate differently and independently of physical proximity, gives social networks distinctive characteristics.

The social identity effects on the interactions of social media users is a new topic in the marketing literature (Champniss et al., 2015; Ruiz-Mafe et al., 2018). From a practical viewpoint, it is valuable to understand and evaluate the role of self-enhancement, social capital, and social presence (Setenay & Kara, 2015) in the eWOM-generation process. Despite the similarities between the physical and electronic contexts in which WOM and eWOM messages are generated, each context has particularities. Arenas-Gaitán et al. (2018) studied the incidence of social identity variables in traditional WOM; they found that the physical presence of individuals participating in a conversation about product characteristics was important, as it enable them to perceive reactions to new information, which contributed to future decision making regarding product or service purchase. This suggests that the differences between eWOM and WOM are not trivial. Moreover, Tajfel and Turner (1986) studied the mechanisms of social identity manifestation in face-to-face contexts; they found that the physical proximity and perceptions of natural gestures (such as nodding the head) that arise within interactions between individuals promoted greater participation and motivated the main interlocutor to continue providing information to the group. Clearly, this type of non-textual communication reinforcement does not occur in the electronic context.

Based on these considerations, several authors have expressed the need to clarify the differences and/or similarities in relational models between social identity and traditional WOM and eWOM (Hsu et al., 2016; Setenay & Kara, 2015; Q. Sun et al., 2019; Teng et al., 2014). This study intends to contribute to this discussion. It analyzes the roles played by these variables, with prior research has considered only individually. For instance, Choi and Scott (2013) examined social capital and its impact on the generation of eWOM in the context of virtual communities. DongHee et al. (2015) studied self-enhancement and the

posting of comments on corporate web pages, focusing on the consumption of a product and perceptions of services related to it. Finally, K. Lee and Choi (2019) examined the influence of cultural and social factors in the generation of eWOM in the social media context.

## 2.2. Social identity and its relation with eWOM

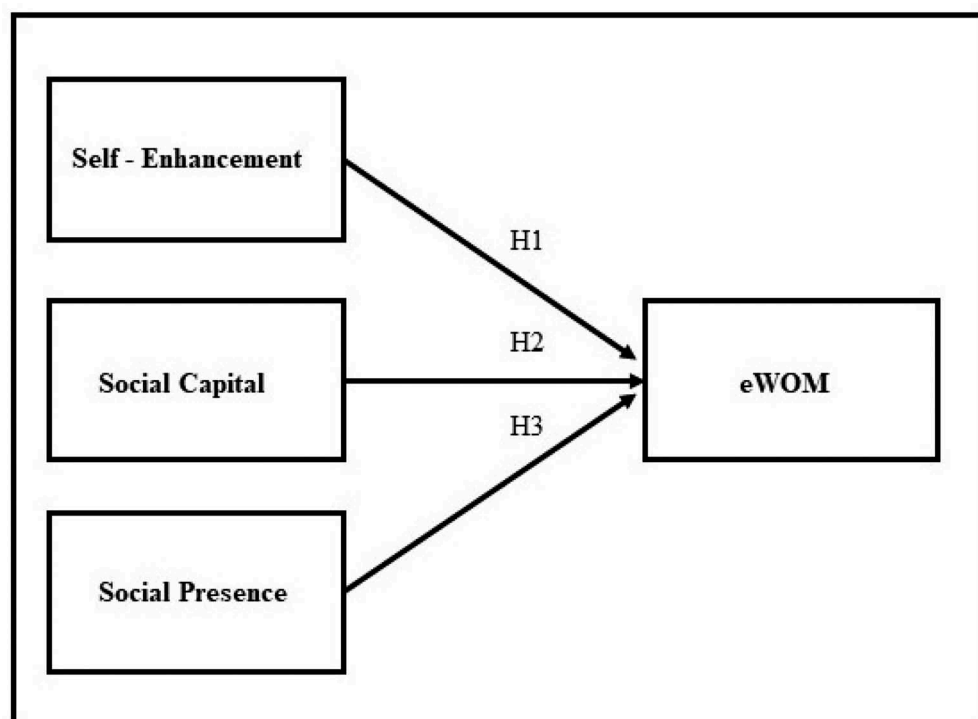
It is essential to first integrate the three variables that constitute social identity in the study of the generation of eWOM in order to assess whether their effect is analogous to that of traditional WOM, given that the factors in the social media context are particular and idiosyncratic (e.g., the duration of the exposure of a message, scope, format). In the second and last instance, the inclusion of all the social identity variables allows a holistic view of the role of personal identity projection factors (self-enhancement and social presence) and of the projection and group contribution factors (social capital) in the generation of eWOM.

The conceptual model presented in Figure 1 shows the proposed relationships between the variables comprising social identity and the generation of eWOM.

According to B. Kim and Kim (2019), the first variable that forms social identity is self-enhancement. This refers to the human need to feel good about oneself (Goris, 2014), and it is manifested in the desire to reinforce or improve the self-concept, achieve a positive self-image, and maintain self-esteem (Turel & Gil-Or, 2019; Yong et al., 2014). Studies on the relationship between eWOM and self-enhancement find that an individual can be motivated, directly or indirectly, to comment on various consumption experiences, based on the community's recognition of the contribution that such information can make (Akpınar & Berger, 2017; Goh et al., 2013).

Hsu et al. (2016) claim that the sense of belonging to a virtual community increases self-enhancement due to the importance and recognition generated between the issuer and the virtual social group from the messages posted about shopping experiences. Thus, we suggest the following hypothesis:

Figure 1. Conceptual model.



### **H1. Self-enhancement has an effect on the generation of eWOM on Facebook.**

The second variable that forms social identity is social capital. Lin (2003) defines this as “the resources embedded in social networks accessed and used by actors for actions” (p. 25). In the field of marketing, social capital is valuable in analyses of consumer behavior, particularly in terms of the information that this variable can provide to social media via users’ comments about product purchase or brand experiences (Filieri, 2015; Tamir & Mitchell, 2012). Tamir and Mitchell state that the sense of collaboration users feel when sharing information that is considered relevant and useful promotes interaction between individuals by virtue of their consumption experiences.

Individuals in a social network contribute reciprocally to the accumulation of their own collective capital through their efforts and commitment (Bourdieu, 1986). Gvili and Levy (2018) found that the social capital on social networks provides relevant information to virtual communities regarding the quality, price, and characteristics of products and services. Therefore, social capital is considered a factor that promotes the participation of people within a social context, electronic or otherwise, through the generation of comments on their consumption experiences, which provides relevant information that can influence users’ decisions to purchase or reject a product or service. Hence, we hypothesize as follows:

### **H2. Social capital has an effect on the generation of eWOM on Facebook.**

The third and last variable to consider is social presence. Borgman (2006) states that “social presence is the degree to which a medium allows interpersonal contacts to be established and it is closely linked to intimacy and immediacy” (p. 34). In the social media environment, social presence is the degree to which a person is perceived as being close (Richardson & Swan, 2003). There is no physical presence in the electronic context; thus, the ability to conceive proximity and generate trust among participants is an important factor for the promotion of interaction within the group (Tshinakaho et al., 2012). The greater the proximity and trust among members of the social network, the more intense the interaction among them, which includes the possibility of intrinsically evaluating the utility, performance, or benefits a particular brand can provide to a consumer (Brodie et al., 2013). Hassan et al. (2018) examined the influence of social presence on purchasing decisions based on the comments made by people belonging to a virtual community. These authors highlight the importance of perceptions of proximity among individuals expressing an opinion or describing their shopping experience and claim that this can affect participants’ future decisions. Jiang et al. (2019) studied the incidence of social presence in purchasing and consumption attitudes in the context of virtual communities, suggesting that the effects of this variable should be measured as the propensity to offer positive comments. Thus, we propose the following:

### **H3. Social presence has an effect on the generation of eWOM on Facebook.**

We test these hypotheses using data obtained from Facebook, one of the world’s most widely used social media. In 2019, Facebook had more than 2,000 million active users, who posted a minimum of four comments per month on average and give an average of 10 “likes” to comments posted by their contacts (Sanz-Blas et al., 2019). Examining Facebook data can allow us to evaluate how messages regarding the consumption experience of products and services influence groups of contacts. If one or more of our hypotheses are accepted, we can claim that the social identity construct plays some role in the generation of eWOM on Facebook in particular and in social media in general.



### 3. Methodology

#### 3.1. Data collection and sample

The sampling frame for this study consisted of undergraduate and graduate students from two universities in the city of Guayaquil: The Universidad Católica de Santiago de Guayaquil and the Universidad de Guayaquil. The former is a private university with the largest number of students in the city, while the latter is a public university with the largest number of students in the country. These two institutions were chosen for sampling to control for the socioeconomic and environmental factors that could influence individuals' consumption habits and social media use. University students comprise the largest segment of social media users, and they use these channels to establish and maintain social relationships (Y. Kim, 2016). Young university students are also well-experienced in sharing eWOM information with their contacts on different social networks (Manzi et al., 2018). A convenience-based sampling method was followed in both cases.

Data collection took one month, from the beginning to the end of February 2018. A sample drawn from university students of both genders aged between 20 and 50 years provides heterogeneous and extensive data regarding the ages of heavy users of Facebook (Hsu et al., 2016), a social network that covers a wider age range than any other social media with a majority of younger users (e.g., Instagram, Snapchat).

The study's instrument was applied to the faculties of Engineering and Administrative Sciences of both the universities due to the ease of access and permission granted by the respective authorities. In addition, these two disciplines allowed a certain heterogeneity to be considered in the intrinsic characteristics of individuals.

Previous studies, such as Kleina et al. (2015), B. Smith and Gallicano (2015), and Teng et al. (2014), that examine virtual communities and social media use for the diffusion of various messages corroborate the effectiveness of working with samples obtained from university students due to the heterogeneity of the factors associated with socioeconomic status, tendency to consume, and active participation in online social communities.

The sample initially comprised 310 people, which is consistent with the standard of Hesse-Biber (2010) regarding studies where correlations are analyzed and with the standard of Kline (2011) for the application of a structural equation model. After the detection of outliers, a final sample comprising 301 people was obtained, and their average response time was 15.09 min (SD = 7.4 min). This final sample consisted of 46.5% male and 53.5% female respondents, of ages ranging from 20 to 50 years.

#### 3.2. Measurement of variables

Four measures were used to evaluate the different variables included in the conceptual model. The self-enhancement variable was measured using an instrument developed by Hennig-Thurau et al. (2004). This instrument is used frequently in studies on the effect of this variable on eWOM in digital media. Part of the instrument developed by Williams (2006) was used for the social capital variable. This is regularly used in studies that consider the social capital variable (Andresen et al., 2017; Sohn et al., 2018). For the social presence variable, the instrument developed by J. Lim et al. (2015) was used, focusing on its direct influence on the posting of comments in virtual environments. Finally, the eWOM variable was captured using a questionnaire prepared by Hsu et al. (2016), which contains eight questions related to the posting of comments by clients in the context of social media. This questionnaire has previously been used to measure the effect of eWOM on social networks, such as Twitter, Weibo, and Snap Chat (I. Lee, 2017; Ortiz et al., 2017; Xiang et al., 2018).

Thus, the instrument used for the data collection in this study was based on the abovementioned four variables and comprised a five-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (5). The results obtained are presented and analyzed in the following section.



### 3.3. Data analysis

The conceptual model presented in Figure 1 was validated in two stages in accordance with the recommendations by Nitzl (2016). The first stage carried out an analysis of the model's internal consistency and a test of the reliability of the instrument. The convergent and divergent validity of the model were also tested with IBM SPSS version 22 software. Next, using AMOS 21 software, the structural model was validated through an evaluation of the respective coefficients, which determined the hypothesized correlations and captured their significance levels.

## 4. Results

### 4.1. Measurement of model

The model was first tested through reliability and convergence indicators. Table 1 presents each of the dimensions of the model with the respective items and load values under the measures.

**Table 1. Reliability and convergence validity of constructs**

Dimension	Item	Load	CA (Cronbach's Alpha)	CR		
(Composite Reliability)	AVE (Average Variance Extracted)	VIF (Variance Inflation Factor)				
Self-enhancement	selfenh1	.723	.83	.91	.65	1.32
	selfenh2	.812				
	selfenh3	.713				
	selfenh4	.778				
Social Capital	soccap1	.698	.86	.89	.63	1.21
	soccap2	.754				
	soccap3	.701				
	soccap4	.743				
	soccap5	.703				
	soccap6	.519				
	soccap7	.599				
	soccap8	.598				
Social Presence	socpre1	.538	.76	.90	.62	1.35
	socpre2	.823				
	socpre3	.794				
	socpre4	.674				
eWOM	ewom1	.642	.81	.88	.62	1.33
	ewom2	.613				
	ewom3	.589				
	ewom4	.623				
	ewom5	.538				
	ewom6	.647				
	ewom7	.629				
	ewom8	.682				

\* $p < .05$ ; CA = Cronbach's alpha; CR = Composite Reliability; AVE = Average Variance Extracted; VIF = Variance Inflation Factor.

We can see that the convergence test values for the model are above 0.5, which indicates statistical significance. Regarding the Cronbach's alpha coefficient (CA), all the variables have values greater than 0.7, which, according to Nitzl (2016), demonstrate high internal consistency for an instrument. Similarly, the composite reliability index (CR) presents values greater than 0.7, signaling the model's validity. Finally, the average variance extracted (AVE) values for the constructs are greater than 0.5, which verifies the model's convergent validity. We can discount the potential for multicollinearity in the estimation, since the variance inflation factor (VIF) value is smaller than 5. Therefore, it can be concluded that the structural model proposed in this study complies with the standard tests of reliability.

The existing correlations among the scales subjected to observation are presented in Table 2.

In Table 2, the square root index of the measure of the variance extracted in the function of each of the variables shows that the values in the diagonal are greater than the others, which verifies the model's discriminant validity in accordance with Kline (2011).

Therefore, in light of the evidence presented above, we can conclude that the structural model passes the canonical reliability and validity tests and can thus be used to test the proposed hypotheses.

#### 4.2. Structural model

This section presents the results of the empirical estimation of the model. The structural model was estimated using bootstrapping in a sample of 1,000 with AMOS 21 software. Table 3 presents the results of the estimation.

Table 3 shows the results of the estimated structural model. We can see that Hypothesis H2 was accepted, while Hypotheses H1 and H3 were rejected. These results suggest that, out of the three variables that make up the social identity construct, only social capital (H2;  $\beta = .75$ ) has a positive and statistically significant effect on the generation of eWOM.

Next, we discuss each of the hypotheses and the implications of their acceptance or rejection following the empirical validation of our model. The factorial analysis of our SEM model is presented in Figure 2.

**Table 2. Discriminant validity of variables**

	SE (Self- Enhancement)	SC (Social Capital)	SP (Social Presence)	EW (eWOM)
SE	.925			
SC	.739	.932		
SP	.817	.891	.911	
EW	.852	.877	.894	.954

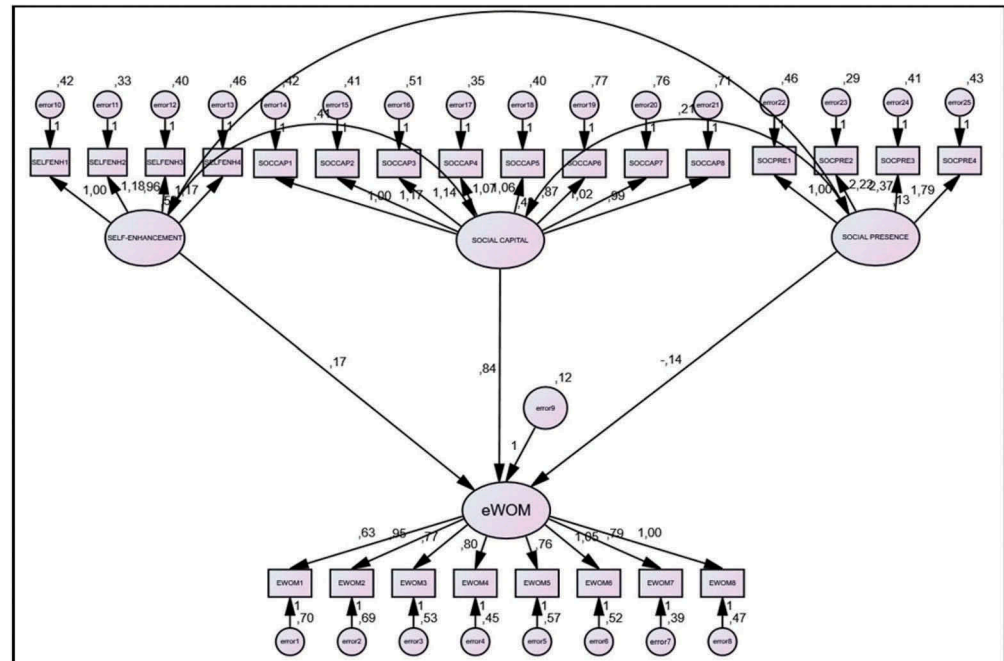
\* $p < .05$ ; SE = Self-enhancement; SC = Social Capital; SP = Social Presence; EW = eWOM.

**Table 3. Structural model findings**

Relationships of Hypotheses	Direct Effects	P	Relationship
H1: SE $\rightarrow$ EW	.13	.34	Not Significant
H2: SC $\rightarrow$ EW	.75	.000	Significant
H2: SP $\rightarrow$ EW	.01	.97	Not Significant

SE = Self-enhancement; SC = Social Capital; SP = Social Presence.  
 EW = eWOM.

**Figure 2. Structural model results.**



Regarding the first hypothesis, although self-enhancement value  $\beta = .133$  indicates a positive influence, the p-value obtained for the test was .336, which rejects the hypothesis. Thus, we find that there is no significant effect between self-enhancement and the generation of eWOM in the context of Facebook in our sample.

Concerning the second hypothesis, we observe that the social capital variable presents a positive impact in the generation of eWOM, with  $\beta = .74$ , with the p-value below .05; this hypothesis is thus accepted. Hence, we find that social capital has a positive effect on the generation of eWOM for Facebook users in our sample.

Regarding the third hypothesis on social presence and the generation of eWOM on Facebook we obtained a value of  $\beta = .01$ , indicating a weak but positive effect, but the p-value was .973, which allows us to reject the hypothesis. Hence, we find that social presence has no statistically significant influence on the generation of eWOM among Facebook users in our sample.

## 5. Discussion

### 5.1. Theoretical contributions

Several studies on the role of social identity and traditional word of mouth have found a relationship between one or more of the variables that compose the construct and the generation of comments on purchase experiences. Of particular interest to our analysis is Langner et al. (2013), who examine the relationship among the variables that constitute social identity in the generation of traditional WOM: self-enhancement, social capital, and social presence. These are the variables we also consider when modelling and measuring social identity as a construct in relation to eWOM.

Some degree of equivalence between online social interactions and face-to-face interactions is reasonable to assume in the construction of a structural model of the social identity construct. Social media play a role in the articulation of self-enhancement and in the generation of social capital via the sharing of purchase experiences (Cui et al., 2019; Moore & McElroy, 2012; Sernovitz,

2012). Furthermore, many studies have examined social components and their role in the generation of eWOM (Ladhari et al., 2019; Tien et al., 2019).

However, though equivalences between the physical and electronic contexts have been analyzed and tested, several authors have remarked on the need to clarify the differences in relational models between social identity and word-of-mouth generation when considering online

environments (Arenas-Gaitán et al., 2018; Hsu et al., 2016; Setenay & Kara, 2015; Q. Sun et al., 2019; Teng et al., 2014).

To assess the effects of the constructive variables of social identity in social media interactions regarding consumption experiences, we propose and test a model that integrates social capital, social presence, and self-enhancement which have so far been studied individually in a single construct.

Our results indicate that social identity has an effect on the generation of eWOM in social media, at least through some channels, relative to its constructive variables in traditional WOM. Social capital seems to be the channel through which this effect takes place. This result is in line with theoretical predictions and previous findings for both offline and online contexts (Hsu, Chih & Liou, 2016; Setenay & Kara, 2015; Sun et al., 2019). Moreover, social capital is a common factor examined in marketing research on consumer interactions and the exchange of information on purchase experiences (Turel & Gil-Or, 2019; Yahia et al., 2018). It is not surprising to find that a proxy for the measurement of trust or proximity is involved in such interactions, as is the case of social capital in the context of a platform like Facebook. Some researchers highlight the importance of a sense of informativeness and collaboration as underlying motivations for sharing comments on consumption experiences. This would build social capital through repeated interactions and the perceived contribution to social knowledge of certain goods and services. The network effects of such capital become even more salient in the context of social media, where the reach and scope of the comments extend beyond physical limitations and even indicators of proximity.

On the other hand, despite having rejected the hypotheses related to the constructive variables of social presence and self-enhancement, we cannot disregard their role in the generation of eWOM. Indeed, many studies find that they play a significant and positive role in eWOM generation when they are tested independently of the other two variables. That is the case of social capital (Hsu & Chau, 2013; Setenay & Kara, 2015), self-enhancement (DongHee et al., 2015; Taylor et al., 2012), and social presence (Shen, 2012; Weisberg et al., 2011). This hints at measurement limitations and suggests the need to adjust the structure of the model so that it can better represent the particular nature of online social interactions.

Therefore, we have found evidence that consistently hints at the constructive and structural differences between online and traditional models of social identity and word of mouth. To be precise, our findings suggest that the social capital variable empirically dominates the other variables considered in the structural model as possible factors in the generation of eWOM. Nevertheless, this does not necessarily mean that the other variables have no effect on users' desire to share comments in social media; this means only that, in the sample and contexts we analyzed, when the variables of self-enhancement, social capital, and social presence are simultaneously involved in a correlational analysis, the latter has the greatest influence. In other words, while social identity as a construct plays an unquestionably important role, more research is necessary to identify the specific mechanisms and extent of its influence.

## 5.2. Managerial implications

Social media constitute the predominant channel consumers use to share their comments on products and services. This study highlights the role that Facebook users can play when

commenting on their purchase experiences. Our results can help managers understand what motivates users to share such experiences.

We find that the desire to provide relevant information regarding consumption within a virtual community is a factor that promotes the generation of comments on Facebook. Social capital, considered a collective factor rather than an individual factors such as the desire for recognition (self-enhancement) or the sense of closeness with other users (social presence), seems to be the main motivator in the generation of eWOM.

This is a well-established insight in the marketing literature. Among the many studies focused on this influence, Yahia et al. (2018) analyze the impact of user opinions regarding their experience with new products, finding that the content generated by users can play a more significant role in the shopping decisions of others than the content generated by companies. Thus, this study recommends that companies should design strategies that encourage the generation of comments that other users could consider informative and relevant. This does not necessarily mean that the comments should only be positive, but that some form of feedback should be established that highlights or makes most visible the comments considered most useful by users. This system is already used in online marketplaces such as Amazon and on user-rating and recommendation platforms for entertainment goods.

The intensity and volume of eWOM engagement are mediated by this mechanism. Tamir and Mitchell (2012) argue that the sense of collaboration felt when sharing information (i.e., whether an opinion is considered relevant and useful) promotes interaction between individuals. The literature would suggest that, even if comments are not all positive, the fact that they exist and are considered reliable by consumers will increase the generation of eWOM, which is found to be strongly correlated with future purchase decisions. Thus, managing consumers' intrinsic motivations for sharing comments, ratings, and opinions might be more important than just incentivizing positive comments in the context of social media.

### **5.3. Limitations and future research**

One of the primary limitations of our study is the sample we use. Although university students are considered ideal Facebook users and have been included in several prior studies of this type which have also used some of our study's eWOM-related variables (Setenay & Kara, 2015; B. Smith & Gallicano, 2015; Teng et al., 2014) our sample limits the generalizability of our study's findings, since there is a significant number of social media users outside the academic area who may share certain demographic characteristics but whose consumption habits may be different.

Another limitation is that the sample covers only a single city of a Latin American country and therefore does not consider the effects that cultural differences may have on the results. Previous studies on cultural features, such as French and Read (2013) and Hollebeek et al. (2014), argue the importance of the cultural context in eWOM, emphasizing that culture affects the manifestation of individual factors, which tend to be expressed more frequently than collective factors. Thus, a multicultural study of the social identity factors should be conducted in order to compare among the findings and propose a generalization regarding the effect of this construct on eWOM in social media.

Another extension of this study could consider other popular social media, such as YouTube, Instagram, or Snapchat. This would help us assess the wider implications of our findings, since these networks and platforms have their own characteristics, which could influence the results. An immediate extension would be the examination of a greater diversity of social media, even if still limited to Ecuadorian university students.

## Funding

The authors received no direct funding for this research.

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## Citation information

Cite this article as: Effect of social identity on the generation of electronic word-of-mouth (eWOM) on Facebook, Franklin Javier González-Soriano, Percy Samuel Marquina Feldman & Javier Alejandro Rodríguez-Camacho, *Cogent Business & Management* (2020), 7: 1738201.

## References

- Aghakhani, N., Karimi, J., & Salehan, M. (2018). A unified model for the adoption of electronic word of mouth on social network sites: Facebook as the Exemplar. *International Journal of Electronic Commerce*, 22(2), 202–231. <https://doi.org/10.1080/10864415.2018.1441700>
- Akpınar, E., & Berger, J. (2017). Valuable virality. *Journal of Marketing Research*, 54(2), 318–330. <https://doi.org/10.1509/jmr.13.0350>
- Andresen, M., Goldmann, P., & Volodina, A. (2017). Do overwhelmed expatriates intend to leave? The effects of sensory processing sensitivity, stress, and social capital on expatriates turnover intention. *European Management Review*, 15(3), 315–328. <https://doi.org/10.1111/emre.12120>
- Arenas-Gaitán, J., Rondan-Cataluña, F., & Ramírez-Correa, P. (2018). Antecedents of WOM: SNS-user segmentation. *Journal of Research in Interactive Marketing*, 12(1), 105–124. <https://doi.org/10.1108/JRIM-07-2017-0052>
- Bilgihan, A., Peng, C., & Kandampully, J. (2014). Generation Y's dining information seeking and sharing behavior on social networking sites: An exploratory study. *International Journal of Contemporary Hospitality Management*, 26(3), 349–366. <https://doi.org/10.1108/IJCHM-11-2012-0220>
- Borges-Tiago, M., Tiago, F., & Cosme, C. (2019). Exploring users' motivations to participate in viral communication on social media. *Journal of Business Research*, 101, 574–582. <https://doi.org/10.1016/j.jbusres.2018.11.011>
- Borgman, C. (2006). What can studies of e-learning teach us about collaboration in e-research? Some findings from digital library studies. *Computer Supported Cooperative Work*, 15(2), 359–83. <https://doi.org/10.1007/s10606-006-9024-1>
- Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). Newark.
- Brodie, R., Ilic, A., Juric, B., & Hollebeek, L. (2013). Consumer engagement in a virtual brand community: An exploratory analysis. *Journal of Business Research*, 66, 67–78. <https://doi.org/10.1016/j.jbusres.2011.07.029>
- Champriss, G., Wilson, H., & Macdonald, E. (2015). Why your customers' social identities matter. *Harvard Business Review*, 93(2), 88–96.
- Chang, C. (2015). Self-construal and Facebook activities: Exploring differences in social interaction orientation. *Computers in Human Behavior*, 53, 91–101. <https://doi.org/10.1016/j.chb.2015.06.049>
- Choi, J., & Scott, J. (2013). Electronic word of mouth and knowledge sharing on social network sites: A social capital perspective. *Journal of Theoretical and Applied Electronic Commerce Research*, 8(1), 69–82. <https://doi.org/10.4067/S0718-18762013000100006>
- Cui, H., Zhao, T., Smyczek, S., Sheng, Y., Xu, M., & Yang, X. (2019). Dual path effects of self-worth on status consumption: Evidence from Chinese consumers. *Asia Pacific Journal of Marketing and Logistics*. Advance online publication. <https://doi.org/10.1108/APJML-06-2019-0364>
- Demiray, M., & Burnaz, S. (2019). Exploring the impact of brand community identification on Facebook: Firm-directed and self-directed drivers. *Journal of Business Research*, 96, 115–124. <https://doi.org/10.1016/j.jbusres.2018.11.016>
- DongHee, K., SooCheong, S., & Howard, A. (2015). What drives café customers to spread eWOM? *International Journal of Contemporary Hospitality Management*, 27(2), 261–282. <https://doi.org/10.1108/IJCHM-06-2013-0269>
- Evans, C. (2014). Twitter for teaching: Can social media be used to enhance the process of learning? *British Journal of Educational Technology*, 45(5), 902–915. <https://doi.org/10.1111/bjet.2014.45.issue-5>
- Filieri, R. (2015). What makes online reviews helpful? A diagnosticity-adoption framework to explain informational and normative influences in e-WOM. *Journal of Business Research*, 68(6), 1261–1270. <https://doi.org/10.1016/j.jbusres.2014.11.006>
- French, A., & Read, A. (2013). My mom's on Facebook: An evaluation of information sharing depth in social networking. *Behaviour & Information Technology*, 32(10), 1049–1059. <https://doi.org/10.1080/0144929X.2013.816775>
- Goh, K., Heng, C., & Lin, Z. (2013). Social media brand community and consumer behavior: Quantifying the relative impact of user-and marketer-generated content. *Information System Research*, 24, 88–107. <https://doi.org/10.1287/isre.1120.0469>
- Goris, J. (2014). Self-appraisals in Mexico. *International Journal of Commerce and Management*, 24(2), 152–166. <https://doi.org/10.1108/IJCoMA-07-2012-0044>
- Gvili, Y., & Levy, S. (2018). Consumer engagement with eWOM on social media: The role of social capital. *Online Information Review*, 42(4), 482–505. <https://doi.org/10.1108/OIR-05-2017-0158>
- Hajli, N. (2018). Ethical environment in the online communities by information credibility: A social media perspective. *Journal of Business Ethics*, 149, 799–810. <https://doi.org/10.1007/s10551-016-3036-7>
- Hassan, M., Iqbal, Z., & Khanum, B. (2018). The role of trust and social presence in social commerce purchase intention. *Pakistan Journal of Commerce and Social Science*, 12(1), 111–135.
- Hennig-Thurau, T., Gwinner, K., Walsh, G., & Gremler, D. (2004). Electronic word-of-mouth via consumer-opinion platforms: What motivates consumers to articulate themselves on the internet?



- Journal of Interactive Marketing*, 18(1), 38–52.  
<https://doi.org/10.1002/dir.10073>
- Hesse-Biber, S. (2010). *Mixed methods research: Merging theory with practice*. Guilford.
- Hollebeek, L., Glynn, M., & Brodie, R. (2014). Consumer brand engagement in social media: Conceptualization, scale development and validation. *Journal of Interactive Marketing*, 28(2), 149–165.  
<https://doi.org/10.1016/j.intmar.2013.12.002>
- Hsu, L., Chih, W., & Liou, D. (2016). Investigating community members' eWOM effects in Facebook fan page. *Industrial Management & Data Systems*, 116(5), 978–1004. <https://doi.org/10.1108/IMDS-07-2015-0313>
- Jiang, C., Rashid, R., & Wang, J. (2019). Investigating the role of social presence dimensions and information support on consumer's trust and shopping intention. *Journal of Retailing and Consumer Services*, 51, 263–270. <https://doi.org/10.1016/j.jretconser.2019.06.007>
- Jin, S. (2018). Celebrity 2.0 and beyond!" Effects of Facebook profile sources on social networking advertising. *Computers in Human Behavior*, 79, 154–168. <https://doi.org/10.1016/j.chb.2017.10.033>
- Kim, B., & Kim, Y. (2019). Growing as social beings: How social media usage for college sports is associated with college's students group identity and collective self-esteem. *Computers in Human Behavior*, 97, 241–249. <https://doi.org/10.1016/j.chb.2019.03.016>
- Kim, Y. (2016). *The analysis of social network service usage and trend*. Korea Information Society Development Institute. <https://www.kisdi.re.kr/kisdi/common/premium?file=1%7C13868>
- Kleina, A., Ahlfb, H., & Sharmac, V. (2015). Social activity and structural centrality in online social networks. *Telematics and Informatics*, 32(2), 321–332. <https://doi.org/10.1016/j.tele.2014.09.008>
- Kline, R. (2011). *Principles and practices of structural equation models* (3a ed.). Guilford Publication.
- Ladhari, R., Rioux, M., Souiden, N., & Chiadmi, N. (2019). Consumers' motives for visiting a food retailer's Facebook page. *Journal of Retailing and Consumer Services*, 50, 379–385. <https://doi.org/10.1016/j.jretconser.2018.07.013>
- Langner, S., Hennigs, N., & Wiedmann, K. (2013). Social persuasion: Targeting social identities through social influencers. *Journal of Consumer Marketing*, 30(1), 31–49. <https://doi.org/10.1108/07363761311290821>
- Lee, I. (2017). A study of the effect of social shopping deals on online reviews. *Industrial Management & Data Systems*, 117(10), 227–240. <https://doi.org/10.1108/IMDS-09-2016-0378>
- Lee, K., & Choi, H. (2019). Predictors of word-of-mouth behavior on social networking sites in the United States and Korea: Cultural and social relationship variables. *Computers in Human Behavior*, 94, 9–18. <https://doi.org/10.1016/j.chb.2018.12.025>
- Lim, H., & Kumar, A. (2018). Variations in consumers' use of brand online social networking: A uses and gratifications approach. *Journal of Retailing and Consumer Services*, 51, 450–457. <https://doi.org/10.1016/j.jretconser.2017.10.015>
- Lim, J., Hwang, Y., Kim, S., & Biocca, F. (2015). How social media engagement leads to sports channel loyalty: Mediating roles of social presence and channel commitment. *Computers in Human Behavior*, 46(3), 158–167. <https://doi.org/10.1016/j.chb.2015.01.013>
- Lin, N. (2003). *Social capital: A theory of social structure and action*. Cambridge University Press.
- Manzi, C., Coen, S., Regalia, C., Yévenes, A. M., Giuliani, C., & Vignoles, V. L. (2018). Being in the social: A cross-cultural and cross-generational study on identity processes related to Facebook use. *Computers in Human Behavior*, 80, 81–87. <https://doi.org/10.1016/j.chb.2017.10.046>
- Moore, K., & McElroy, J. (2012). The influence of personality on Facebook usage, wall postings, and regret. *Computers in Human Behavior*, 28(1), 267–274. <https://doi.org/10.1016/j.chb.2011.09.009>
- Nitzl, C. (2016). The use of partial least squares structural equation modelling (PLS-SEM) in management accounting research: Directions for future theory development. *Journal of Accounting Literature*, 37, 19–35. <https://doi.org/10.1016/j.acclit.2016.09.003>
- Olof, S., & Grundén, K. (2014). Social media marketing in the wellness industry. *The TQM Journal*, 26(3), 253–260. <https://doi.org/10.1108/TQM-12-2013-0129>
- Ortiz, J., Chih, W., & Teng, H. (2017). Electronic word of mouth in the Taiwanese social networking community: Participation factors. *Internet Research*, 27(5), 1058–1084. <https://doi.org/10.1108/IntR-09-2016-0276>
- Phua, J., Jin, S. V., & Kim, J. (2017). Gratifications of using Facebook, Twitter, Instagram, or Snapchat to follow brands: The moderating effect of social comparison, trust, tie strength, and network homophily on brand identification, brand engagement, brand commitment, and membership intention. *Telematics & Informatics*, 34(1), 412–424. <https://doi.org/10.1016/j.tele.2016.06.004>
- Richardson, J., & Swan, K. (2003). Examining social presence in online courses in relation to students perceived learning and satisfaction. *Journal of Asynchronous Learning Networks*, 7, 68–88.
- Ruiz-Mafe, C., Bigne-Alcañiz, E., Sanz-Blas, S., & Tronch, J. (2018). Does social climate influence positive eWOM? A study of heavy-users of online communities. *Business Research Quarterly*, 21(1), 26–38. <https://doi.org/10.1016/j.brq.2017.12.001>
- Sanz-Blas, S., Bigné, E., & Buzova, D. (2019). Facebook brand community bonding: The direct and moderating effect of value creation behavior. *Electronic Commerce Research and Application*, 35, 1–8. <https://doi.org/10.1016/j.elerap.2019.100850>
- Sernovitz, A. (2012). *Word of mouth marketing: How smart companies get people talking* (3rd ed.). Greenleaf Book Group Press.
- Setenay, K., & Kara, A. (2015). Online word-of-mouth communication on social networking sites. *International Journal of Commerce and Management*, 25, 2–20.
- Shen, J. (2012). Social comparison, social presence, and enjoyment in the acceptance of social shopping websites. *Journal of Electronic Commerce Research*, 13(3), 198–212. <https://doi.org/10.1108/IJCoMA-11-2012-0070>
- Smith, B., & Gallicano, T. (2015). Terms of engagement: Analyzing public engagement with organizations through social media. *Computer in Human Behavior*, 53(3), 82–90. <https://doi.org/10.1016/j.chb.2015.05.060>
- Smith, K. (2019, June 1). 53 Incredible facebook statistics and facts. Retrieved February 2, 2020, from Brandwatch <https://www.brandwatch.com/blog/facebook-statistics/>
- Sohn, Y., Woo, S., Jo, D., & Yang, E. (2018). The role of the quality of college-based relationship on social media in college-to-work transition of Korean college students: The longitudinal examination of intimacy on social media, social capital, and loneliness. *Japanese Psychological Research*, 1, 320–343. <https://doi.org/10.1111/jpr.12234>
- Sun, M. (2012). How does the variance of product ratings matter? *Management Science*, 58(4), 696–707. <https://doi.org/10.1287/mnsc.1110.1458>



- Sun, Q., Niu, J., Yao, Z., & Yan, H. (2019). Exploring eWOM in online customer reviews: Sentiment analysis at a fine-grained level. *Engineering Application of Artificial Intelligence*, 81, 78–88. <https://doi.org/10.1016/j.engappai.2019.02.004>
- Tajfel, H., & Turner, J. (1986). The social identity theory of intergroup behavior. In S. Worchel & W. G. Austin (Eds.), *Psychology of intergroup relations* (pp. 7–24). Nelson-Hall.
- Tamir, D., & Mitchell, J. (2012). Disclosing information about the self is intrinsically rewarding. *Proceedings of the National Academy of Sciences*, 109(21), 8038–8043. <https://doi.org/10.1073/pnas.1202129109>
- Taylor, D., Strutton, D., & Thompson, K. (2012). Self-enhancement as a motivation for sharing online advertising. *Journal of Interactive Advertising*, 12(2), 13–28. <https://doi.org/10.1080/15252019.2012.10722193>
- Teng, S., Khong, K., Goh, W., & Chong, A. (2014). Examining the antecedents of persuasive eWOM messages in social media. *Online Information Review*, 38(6), 746–768. <https://doi.org/10.1108/OIR-04-2014-0089>
- Tien, D., Rivas, A., & Liao, Y. (2019). Examining the influence of customer-to-customer electronic word-of-mouth on purchase intention in social networking sites. *Asia Pacific Management Review*, 24(3), 238–249. <https://doi.org/10.1016/j.apmr.2018.06.003>
- Tshinakaho, R., Seaba, R., & Mompoloki, K. (2012). Conceptualizing social presence awareness in e-collaboration of postgraduate students. *Interactive Technology and Smart Education*, 9(3), 124–135. <https://doi.org/10.1108/17415651211258254>
- Turel, O., & Gil-Or, O. (2019). To share or not to share? The role of false Facebook self, sex and narcissism in reposting self-image enhancing products. *Personality and Individual Differences*, 151, 49–60. <https://doi.org/10.1016/j.paid.2019.109506>
- Wang, J., Wang, X., & Liu, Y. (2019). A discrete electronic word-of-mouth propagation model and its application in online social network. *Journal of Physica A*, 52, 1–11.
- Weisberg, J., Teeni, D., & Arman, L. (2011). Past purchase and intention to purchase in e-commerce. *Internet Research*, 21(1), 82–96. <https://doi.org/10.1108/10662241111104893>
- Williams, D. (2006). On and off the net: Scales for social capital in an online era. *Journal of Computer-Mediated Communication*, 11(2), 593–628. <https://doi.org/10.1111/jcmc.2006.11.issue-2>
- Xiang, L., Zheng, X., Zhang, K., & Lee, M. (2018). Understanding consumers' continuance intention to contribute online reviews. *Industrial Management & Data Systems*, 118(1), 22–40. <https://doi.org/10.1108/IMDS-09-2016-0395>
- Yahia, I. B., Al-Neama, N., & Kerbache, L. (2018). Investigating the drivers for social commerce in social media platforms: Importance of trust, social support and the platform perceived usage. *Journal Retail Consumer Services*, 41(2), 11–19. <https://doi.org/10.1016/j.jretconser.2017.10.021>
- Yang, Y., Park, X., & Hu, S. (2018). Electronic word of mouth and hotel performance: A meta-analysis. *Tourism Management*, 67(1), 248–260. <https://doi.org/10.1016/j.tourman.2018.01.015>
- Yong, J., Seo, D., & Scammon, L. (2014). Does feeling holier than others predict good deeds? Self-construal, self enhancement, and helping behavior. *Journal of Consumer Marketing*, 31(6), 441–451. <https://doi.org/10.1108/JCM-06-2014-1029>



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