


The mediating role of consumer engagement in the effect of social media marketing on electronic word-of-mouth intention

Sosyal medya pazarlamasının elektronik ağızdan ağza iletişim niyeti üzerindeki etkisinde tüketici bağlılığının aracılık rolü

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Abstract

With the increase of usage in social media channels, individuals interact much more with each other. For this reason, word of mouth communication activities between individuals using social media emerges as a phenomenon that companies should not ignore. However, the mediating role of consumer engagement and word-of-mouth intention has not received enough attention in the studies of social media marketing activities up to now. This study examines whether social media marketing affects e-WOM intention and whether consumer engagement has a mediating role in this effect. An online questionnaire form was sent to individuals using social media and mobile communication applications. The usable data obtained from 464 individuals were analyzed with the help of the AMOS package program. The hypotheses tested using structural equation modelling reveal that social media marketing has a positive and significant effect on consumer engagement and e-wom intention. Besides, based on the test results, it can be argued that consumer engagement has a positive and significant effect on the intention of electronic word-of-mouth communication. Finally, through this study, it was found that consumer engagement has a mediating effect between social media marketing and electronic word-of-mouth intention. Therefore, this present study has a remarkable contribution to the social media marketing literature.

Keywords: Social Media Marketing, Consumer Engagement, e-Word-of-mouth Communication Intention

Jel Codes: M30, M31, M39

Öz

Sosyal medya mecralarındaki kullanımın artmasıyla birlikte kişiler birbirleriyle çok daha fazla karşılıklı etkileşimde bulunmaktadır. Bu sebeple sosyal medya kullanan bireyler arasında gerçekleşen ağızdan ağza iletişim faaliyetleri firmaların göz ardı etmemesi gereken bir olgu olarak karşımıza çıkmaktadır. Ancak sosyal medya pazarlaması faaliyetlerinin, ağızdan ağza iletişimdeki rolüne ait yapılan çalışmalarda tüketici bağlılığının aracılık rolü bugüne kadar yeterli ilgiyi görmemiştir. Bu çalışmada sosyal medyanın e-wom niyeti üzerindeki etkisinde tüketici bağlılığının aracılık rolünün olup olmadığı araştırılmıştır. Çevrimiçi olarak hazırlanmış anket formu sosyal medya ve mobil iletişim uygulamalarını kullanan bireylere gönderilmiştir. 464 kişiden elde edilen kullanılabilir veriler AMOS paket program yardımı ile analiz edilmiştir. Yapısal eşitlik modellemesi kullanılarak yapılan hipotez testleri ile sosyal medya pazarlamasının, tüketici bağlılığı ve e-wom niyeti üzerinde olumlu ve anlamlı bir etkiye sahip olduğu belirlenmiştir. Ayrıca test sonuçlarına bağlı olarak tüketici bağlılığının da elektronik ağızdan ağza iletişim niyeti üzerinde olumlu ve anlamlı bir etkiye sahip olduğu söylenebilir. Son olarak, bu çalışmada; tüketici bağlılığının, sosyal medya pazarlaması ile e-wom niyeti arasında aracılık etkisine sahip olduğu sonucuna ulaşılmıştır. Bu nedenle gerçekleştirilen bu çalışma sosyal medya pazarlaması literatürüne önemli katkılar sunmaktadır.

Anahtar Kelimeler: Sosyal Medya Pazarlaması, Tüketici Katılımı, Elektronik Ağızdan Ağza İletişim Niyeti

JEL Kodları: M30, M31, M39

Introduction

Technology has started to constitute a large part of consumers' lives worldwide at the beginning of the 20th century. Both innovative platforms and new media applications began to participate in consumers' lives with the rise of information technologies development. Uses and Gratification Theory (UGT) is about satisfying needs when one's needs are fulfilled by media channels (Ko, Cho, & Roberts, 2005). The UGT theory has three specific purposes. First, UGT primarily tries to clarify the usage of mass media for individual needs. The second goal is linked to the emergence of the underlying reasons for people's use of the media. Finally, it is aimed to determine the positive and negative consequences of individuals' use of mass media (Levy & Windahl, 1984). According to UGT, people felt the need to use mass media primarily for some requirements (Siraj, 2007), and these can be summarized as follows:

1. People desire to avoid loneliness and spend time
2. People request information to strengthen their social knowledge
3. People wish to get to know, connect and communicate with others

Many studies Ruggiero (2000), Lee and Kim (2017), Liu, Shin, & Burns (2020) done with consumers using these online media channels and applications have been based on the UGT. Kara (2016), Yayla (2018), Papacharissi and Mendelson (2011), Lee and Kim (2017), Liu et al. (2020), Bailey, Bonifield, & Elhai (2021) studies examine people's use of social media within the framework of UGT. Social networking sites have rapidly become a critical touchpoint in customers' journeys with brands during the purchase cycle (Demmers et al., 2020). Social networking sites fulfil consumers specific needs, and they are likely to affect consumer engagement (Baxendale et al., 2015).

Among the resources accessed up to date, we have not found a study that examines consumer engagement's mediating role in the relationship between social media marketing and e-WOM intention. In the scope of this gap in the literature, the purpose of this study is to determine the mediating role of customer engagement in the relationship between social media marketing and e-WOM intention.

Literature review

A literature review determining the relationship between research variables and hypotheses development is presented below.

Social media marketing

Social media is a digital platform where users share different online activities and develop social relationships. This kind of involvement enables web-based users to interact via instant messages, digital voice, and video shares (Huang et al., 2014). Companies try to transfer their existing activities to their consumers in a strategical and methodical digital environment (Si, 2016). Today, many businesses develop their marketing activities through social media, and companies that exchange information with their customers can establish bonds by sharing their mutual experiences (Kim et al., 2019). Bui (2014) pointed out that businesses engaged in social media marketing activities could create brand value for potential consumers and have the advantage of receiving feedback from their consumers. Today, companies benefit from social media channels eliminating geographical barriers (Gao et al. 2018) and enabling much more effective communication with their customers (Naylor et al. 2012).

Consumer engagement

Active participants in social media are self-managed producers and information seekers who want to behave freely (Livingstone, 2004). Consumer engagement is a strategic direction in marketing (Leonidas et al., 2016). Additionally, consumers' interactions with sales personnel in physical and virtual environments before, during, or after-sales constitute consumer engagement examples (Dolan et al., 2016). Connecting with consumers is the focus of all companies; hence marketers use social media to increase consumer engagement (Ashley & Tuten, 2015). Consumer engagement occurs typically between the social media users and the pages, groups, individuals, posts of companies in social media networks (Giakoumaki and Krepapa, 2000). Consumers' interactions in these channels are crucial, particularly for understanding the customers' needs and wants.

E-wom intention

WOM, which took place in the period before the emergence of the Internet, developed as eWOM with the inclusion of social media channels that emerged after the use of the internet (Devereux et al., 2020) E-WOM is clarified as customers' any positive or negative sharing for the products offered by different brands often on social media via Internet (Lee & Koo, 2012). Today, changing communication types and

communication environments with technological developments reveal e-WOM (Sun et al., 2020). According to individual and social behaviour theories, consumer interaction with e-WOM is related to consumers' previous experiences on these social sites and their recognition by others (Rossmann et al., 2016). Gvili and Levy (2018), Chu and Kim (2011), Srivastava et al. (2020) contributed the consumer behaviour literature by their studies on consumer engagement with e-WOM on social media.

Relationships among research variables

In previous studies, consumers' e-WOM intention was estimated with different factors such as reputation, sense of belonging, brand equity, and brand awareness (Cheung & Lee, 2012; Cuong, 2020; Sun et al., 2020). Numerous studies deal with consumer-e-WOM intentions (Kim et al., 2016; Sa'ait et al., 2016; Yoon, 2012).

Reviewing the past literature, Liu et al. (2019) found a positive relationship between social media marketing facilities and customer engagement for luxury brands. Findings in the study of Fatma et al. (2020) and Chu and Kim (2011) show that consumer engagement in social media sites increases e-WOM intentions. Tsimonis and Dimitriadis (2014) stated that a sense of interaction between consumers on social media might create consumer engagement.

In Turkey, Orel and Arik (2020) examined the effect of fashion brands' social media marketing activities on online consumer engagement and purchasing intention. Biçer and Erciş (2020) evaluated the dimensions affecting consumers' purchasing purpose and the factors affecting these dimensions by engaging in viral marketing communication in social networks.

In light of the theoretical grounds stated so far, the research model shown in Figure 1 is constructed.

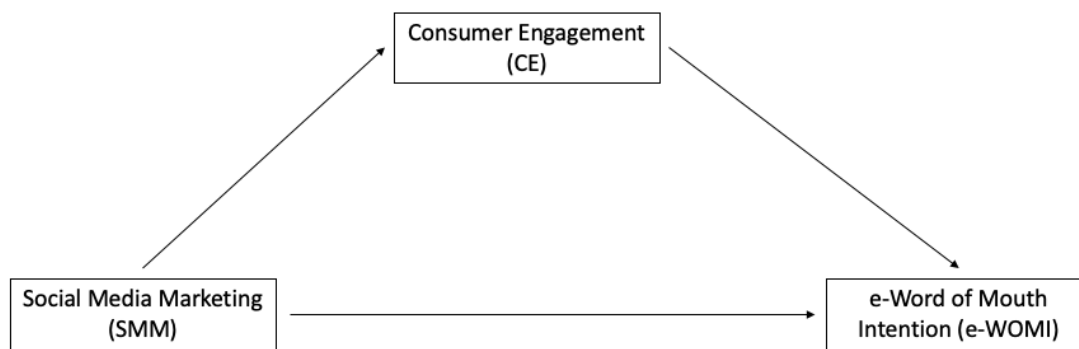


Figure 1: Research Model

Source: Produced by the authors.

Since companies carry out social network marketing activities on their brands, individuals become very active on social network platforms and generate new ideas. (Verma et al., 2012). Social media significantly assists in increasing consumer engagement and facilitates two-way interaction between the firms and customers. (Deighton & Kornfeld, 2009; Vivek et al., 2012). Because social media users advise and share their experiences, most companies increasingly pay great attention to this situation. (Mochon et al., 2018; Sawhney et al., 2005). Consumer engagement through firms' products can increase positive attitudes towards those firms through social media (Tafesse, 2016; Van Doorn et al., 2010). The more consumers are interested in a product, the more they are likely to buy it (Kim & Ko, 2012). Therefore, we put forward the following hypothesis:

H₁: *Social media marketing has a positive and significant effect on consumer engagement.*

Consumer engagement, expressed as the intensity of relational activities, is a powerful phenomenon that affects consumer behaviour. (Boateng, 2019). Word of mouth communication results in the verbal expressions of a company, a brand, or a product (Grewal et al., 2003). Its importance is increasing in the marketing literature in terms of creating communication between consumers. (Islam & Rahman, 2016). Individuals who are satisfied and have a long-term relationship with the companies have much more word-of-mouth communication than new customers. (Liang & Wang, 2007). Word of mouth communication has a significant effect on user-generated content in digital environments. (Chatterjee, 2001; Kumar et al., 2010). Some studies (Hollebeek & Chen, 2014; So et al., 2014) prove that consumer engagement positively affects the recommendation of any products or brands to others. Thus, we propose the following hypotheses based on the literature:

H₂: Social media marketing has a positive and significant effect on e-WOM intention.

Word-of-mouth communication (WOM), seen as a type of promotional activity in the past (Bone, 1995), is more critical through online media today (De Valck et al. 2009) because of its speed in spreading the ideas (Brodie et al. 2013). Word-of-mouth communication activities between individuals depend on other individuals' product reviews, comments, and individual's post-use complaints and constitute a critical situation through online platforms (Kumar et al., 2010). During the collaborative information exchange process, consumer engagement should be considered due to the importance of interaction with both company representatives and other customers (Wagner & Majchrzak, 2006). Moreover, since individuals' interaction with companies is at a high level, they tend to spread the positive image of these brands (Algesheimer et al., 2005; Zhang et al., 2017). Some studies also show that consumer engagement influences advising on various online platforms (Okazaki et al., 2014) and word of mouth communication (Islam & Rahman, 2016). Hence, this study emphasizes the following hypotheses:

H₃: Consumer engagement has a positive and significant effect on e-WOM intention.

H₄: Consumer engagement has a mediating role in the indirect effect of social media marketing on e-WOM intention.

Methodology

The sampling technique, the scales' validity, reliability, and the statistical methods are explained.

Sample

A survey method was preferred to understand consumers' basic thoughts about goods and services and bring out the changes in their existing attitudes (Zaltman, 2003). The universe of this study is all social media users. This study's sample consists of respondents between the ages of 18-65 intending to purchase the brands that they follow on their social media accounts. Due to the Covid-19 outbreak, the online survey form was shared on social media platforms, and the data were collected from 464 online respondents. Before starting the data collection process, a pilot study was conducted with 40 people between August 1, 2020, and August 5, 2020. During the study's progress, 464 data were collected between August 6, 2020, and August 23, 2020, from individuals who accepted to participate in the survey voluntarily using the convenience sample by online questionnaire form. Since structural equation modelling is used in data analysis, great attention has been paid to collect data of at least ten times the total items of the scale (Hair et al., 2014). In total, 69.4% of the respondents were women, 52.6% were single, 60.8% were under 40, 36% were undergraduate graduates, and 42.5% had an income of 3500 TL or less. The survey questionnaire comprised two parts. Social media marketing, consumer engagement, and electronic word-of-mouth intention scales are included in the first part. In the second part, gender, age, marital status, and educational status were asked to determine the respondents' demographic characteristics. Descriptive statistics of the data used in the analysis process can be seen in Table 1.

Table 1. Descriptive analysis of scales and data

Scales	Average	Std. Deviation	Cronbach's Alpha	Item	Reference
SMM	3,41	0,653	0,818	8	Toor et al. (2017)
CE	3,03	0,759	0,810	6	Toor et al. (2017)
e-WOMI	3,16	0,802	0,812	4	Chu et al. (2019)

Note. SMM=Social media marketing, CE=Customer engagement, e-WOMI=Electronic word-of-mouth intention.

Statistical methods

If the reliability coefficient ranging from 0 to 1 has a value of 0.6 or less, it is usually exhibited as insufficient internal consistency (Malhotra & Birks, 2006, p. 314). In this scope, when the Cronbach's Alpha values in Table 1 are analyzed, it is seen that the scales used in this research have sufficient internal consistency.

We used sequential measures to evaluate the collected data. First, all the descriptive statistics and correlation coefficients of study variables were stated to determine the relationship between dependent and independent variables. Second, confirmatory factor analysis was performed for dependent and independent variables to verify a previously developed scale or model's accuracy with its theoretical basis with data used or collected in previous studies. Thirdly, used the AMOS program to measure the indirect effect and analyze mediation tests under the proposed modern approach (Cerin & MacKinnon, 2008; Hayes, 2009; Rucker et al., 2011; Zhao et al., 2010).

Findings

Scales consisted of three variables, and a total of 18 items were analyzed by confirmatory factor analysis (CFA) to test the validity of the model. As a result of CFA, although all items are significant ($p < 0.05$; $t > 1.96$), factor loadings of three items (SMM6, SMM7, and SMM8) belonging to the social media marketing variable and one item (CE4) belonging to consumer engagement were excluded from the analysis because it was below the threshold value of 0,30 (Brown, 2015). After extracting items from the model, the analysis was performed again. While the item's standardized lowest factor load value was 0.56, the highest factor load value was 0.83. Since the goodness of fit criteria emerging as a result of CFA are not at the desired level ($\chi^2 = 273.29$; $N = 464$), $p < 0.001$; $\chi^2 / df = 3.69$; $RMSEA = 0.76$; $SRMR = 0.05$; $CFI = 0.93$; $GFI = 0.92$; $NFI = 0.90$) Correction was made by adding covariance between the error terms of CE1-CE2, CE3-CE5 and SMM4-SMM5 items. According to the result of the correction process, the CFA goodness of fit index values are acceptable ($\chi^2 = 206,158$; $p < 0,001$; $\chi^2 / df = 2,90$; $RMSEA = 0,64$; $SRMR = 0,45$; $CFI = 0,95$; $GFI = 0,94$; $NFI = 0,93$) suggested by Hu and Bentler (1999). CFA results can be seen in Table 2.

Table 2. Confirmatory factor analysis results

Items	β^a	S.E.	t	R^2
SMM (Mean= 3,57, S=0,72, a=0,82)				
I like to use social media sites to increase my knowledge of products, services, and brands.	0,72			0,52
I am satisfied with the social media marketing of brands I follow.	0,70	0,066	13,44*	0,49
The social media marketing of brands is very attractive.	0,66	0,065	12,82*	0,44
Using social media sites of brands is fun.	0,65	0,071	12,42*	0,42
Contents on social media sites of brands are interesting.	0,68	0,066	12,90*	0,46
eWOM-I (Mean= 3,16, S=0,80, a=0,81)				
I say positive things about brands I follow on social media sites.	0,68	0,052	14,99*	0,47
I use the brands I follow on social media sites to encourage my friends and relatives to look and buy.	0,77	0,060	17,08*	0,59
I recommend the brands I follow on social media sites.	0,82			0,68
I like brand related products posted by my friends and relatives on social media sites	0,62	0,058	13,41*	0,39
CE (Mean =3,22, S=0,80, a=0,79)				
I often visit the web pages of brands I follow on social media sites	0,71			0,50
I often read the posts of the brands of social media sites.	0,67	0,056	16,63*	0,45
I often click the "like" option on the posts of the brand I follow on social media sites.	0,61	0,084	11,68*	0,37
I follow brands pages of my interest to get information (e.g., new products).	0,65	0,071	12,56*	0,43
Part of brands I follow on social media sites, increased my trust in that brands.	0,65	0,074	12,61*	0,42
Note 1. ^a Standardized value				
Note 2. * $p < .001$.				

The convergent-divergent validity properties of the scales were examined in the study. For convergent validity, (1) the significance of the factor loads, (2) the composite reliability (CR), and (3) average variance extracted (AVE) coefficients are checked. According to Table 2, it is seen that all factor loadings are significant, and according to Table 3, the CR value is above 0.70. Although the AVE value is expected to be above 0.50, CR value above 0.70 still indicates that the structures have differentiation validity among themselves (Fornell & Larcker, 1981; Huang et al., 2013). Also, AVE is a strict calculation method. The researchers argue that the structures in question have decomposition validity based on CR alone (Malhotra & Dash, 2106). We can see the results of the convergent-divergent validity in Table 3.

Table 3. Convergent-divergent validity

Variables	CR	AVE	SNM	eWOM-I	CE
SMM	0,818	0,474	0,689		
e-WOMI	0,817	0,530	0,630***	0,728	
CE	0,806	0,458	0,797***	0,781***	0,676

Note. AVE= Average variance extracted, CR = Composite reliability, SMM=Social media marketing, CE=Customer engagement, e-WOMI=Electronic word-of-mouth intention.

As shown in Table 3, the CR values of the study's factors vary between 0.81 and 0.82, and AVE values between 0.46 and 0.53. In this case, it is possible to say that the variables have divergent validity in the model. The Heterotrait-Monotrait (HTMT) correlation ratio was used to test whether the model's factors

have divergent validity. In recent studies, the HTMT method has become popular in divergent validity tests (Henseler et al., 2015; Voorhees et al., 2016). The HTMT test is determined by calculating the geometric mean of the mean correlations between structures within the items of the same structure (Voorhees et al., 2016). A threshold of 0.85 or 0.90 is recommended for this ratio (Henseler et al., 2015). If the values between structures exceed this recommended ratio, it is possible to mention divergent validity for the model. Considering the analysis, the HTMT ratios between the structures vary between 0.61 and 0.84. Accordingly, it can be said that the scales included in the research have divergent validity. It is evaluated that the research model was validated, and it was approved that the scales have construct validity.

After the model's validation, it was analyzed whether consumer engagement has a mediating role in the relationship between social network marketing and electronic word of mouth by using the implicit variable structural model. A modern mediation analysis approach is adopted, considering the indirect effect to be significant enough for mediation even when the total or direct effect is not statistically significant (Hayes, 2009; Rucker et al., 2011). Besides, no classification was made for the resulting mediation (such as partial or complete mediation); reviewed only the mediation effect's significance (Hayes, 2018; Rucker et al., 2011). The bootstrap test was used in testing the significance of the mediation effect, and 5000 repetitions were preferred for this test at a 95% confidence interval (DiCiccio & Efron, 1996; Hayes, 2009). Statistical values of the hypotheses can be seen in Table 4.

Table 4. Direct and indirect effects test results

SEM Results	β	S.E.	p	%95 CI		Hypothesis test results
				LL	UL	
SMM→EWOMI	0,64	0,05	0,000	0,533	0,724	H ₁ Supported.
SMM→CE	0,82	0,04	0,001	0,732	0,885	H ₂ Supported.
CE→EWOMI	0,94	0,14	0,000	0,716	1,254	H ₃ Supported.
<i>Mediation effects</i>						
SMM→CE→EWOMI						
Total Effect	0,64	0,05	0,000	0,533	0,724	
Direct Effect	-0,13	0,14	0,263	-0,468	0,098	
Indirect Effect	0,77	0,14	0,000	0,568	1,114	H ₄ Supported.

Note. CI = Confidence interval, LL= Lower limit, UL= Upper limit, SMM=Social media marketing, CE=Customer engagement, e-WOMI=Electronic word-of-mouth intention.

The goodness of fit values of the model were found to be suitable for the acceptable goodness of fit evaluations by Hu and Bentler (1999) ($\chi^2 = 206,158$; $p < 0.001$; $\chi^2 / df = 2.90$; RMSEA = 0.64; SRMR = 0.45; CFI = 0.95; GFI = 0.94; NFI = 0.93). Hypothesis tests and analysis results can be seen in Table 4. No significant negative correlation was found between social media marketing and electronic word-of-mouth intention ($\beta = 0.64$; $p < 0.001$). Consequently, the H₁ hypothesis was supported. Secondly, we tested the H₂ (SMM → CE) hypothesis in the study. Positive significant relationship is found between social media marketing and consumer engagement ($\beta = 0.82$; $p < 0.01$). As a result, the H₂ hypothesis was supported. On the other hand, social media marketing's power emerged at a moderate rate of 0.67 to explain consumer engagement (Hair et al., 2014). In other words, consumer engagement had the power to explain social media marketing activities by 67%.

In the next step, H₃ (CE → e-WOMI) was tested. A positive and significant relationship was found between consumer engagement and electronic word-of-mouth intention ($\beta = 0.94$, $p < 0.001$). Accordingly, it supported the H₃ hypothesis. Eventually, H₄ (SMM → CE → e-WOMI) mediation hypotheses were tested in the research. The significant positive relationship between social media marketing and electronic word-of-mouth intention is mediated by consumer engagement ($\beta = 0.77$; 95% CI [0.568; 1.114]). In other words, while social media marketing predicts consumer engagement, consumer engagement is positively associated with electronic word-of-mouth intention. Also, social media marketing and consumer participation together have a moderate (0.70) power to explain the electronic word of mouth intention (R²) (Hair et al., 2014). Accordingly, it was determined that individuals' electronic word-of-mouth intentions were associated with social media marketing and consumer engagement by 70%. Consequently, it supported the H₄ hypothesis.

Discussion

Today, many companies carry out their marketing activities through social media. This kind of interaction enables them to communicate with their target market and reach their expected goals. Social

media marketing activities are based on increasing the companies' sales and services in a virtual environment. As a marketing strategy of companies operating in the virtual world, it is necessary to increase consumer engagement to increase consumers' e-WOM intentions. Consumers usually post their comments for the products they are engaged in on social media and creating interaction between consumers and brands on online platforms (Gvili & Levy, 2018).

Our study's framework was to measure social media marketing's impact on both consumer engagement and e-WOM intention and the mediating role of consumer engagement between them. As a result, the possibility of individuals' engagement in social media sites can increase their connection with products, services, and brands. On the other hand, consumer engagement creates higher sales and profitability opportunities (Barger et al., 2016). Sellers can also build consumer loyalty through social media channels (Sashi et al., 2019).

The findings of this study showed that social media marketing has significant and positive effects on consumer engagement and e-WOM intention compatible with existing and available literature (Choi et al., 2019; Choi et al., 2017; Elseidi & El-Baz, 2016; Ortiz et al., 2017; Strutton et al., 2011; Yoo et al., 2013). As a result of conducted mediation analyses, consumer engagement has a partial mediation role in some studies (Omar et al., 2018; Toor et al., 2017).

It would be better for marketers to engage in activities that can attract consumers to the virtual world. Alternative strategies can be applied according to the consumers' concerns and needs by constantly monitoring current events. Short surveys or online activities offering promotional options can be designed to understand consumers' expectations and intentions. Finally, marketers can make their plans to create effective advertisements on social media sites to increase consumer engagement to create a positive e-WOM aim. Chu and Kim (2011) contend that product-focused e-WOM on social media is crucial for social involvements. Froget et al. (2013) pointed out that many companies operating in Mauritius see Facebook as a marketing and public relations tool. Furthermore, they found a positive relationship between the motivation of using Facebook and getting information about new products to discuss them (e-WOM intention) on social network sites.

Future studies might investigate how the other variables, such as consumer attitude, consumer motivation, or brand awareness, can moderate this relationship. Besides, the limitation of this study can be seen as its conduction in Turkey. It might be a valuable expansion to conduct another research to see how consumer engagement plays a role as a moderator in different countries. Individual differences and motivational variables might be examined in future studies to understand the determinants of consumer engagement in e-WOM.

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References

- Algesheimer, R., Dholakia, U. M., & Herrmann, A. (2005). The social influence of brand community: Evidence from European car clubs. *Journal of marketing*, 69(3), 19-34. <https://doi.org/10.1509/jmkg.69.3.19.66363>
- Ashley, C., & Tuten, T. (2015). Creative strategies in social media marketing: An exploratory study of branded social content and consumer engagement. *Psychology & Marketing*, 32(1), 15-27. <https://doi.org/10.1002/mar.20761>
- Bailey, A. A., Bonifield, C. M., & Elhai, J. D. (2021). Modeling consumer engagement on social networking sites: Roles of attitudinal and motivational factors. *Journal of Retailing and Consumer Services*, 59, 102348. <https://doi.org/10.1016/j.jretconser.2020.102348>
- Barger, V., W. Peltier, J., & Schultz, D. E. (2016). Social media and consumer engagement: A review and research agenda. *Journal of Research in Interactive Marketing*, 10(4). <https://doi.org/10.1108/JRIM-06-2016-0065>
- Baxendale, S., Macdonald, E. K., & Wilson, H. N. (2015). The impact of different touchpoints on brand consideration. *Journal of Retailing*, 91(2), 235-253. <https://doi.org/10.1016/j.jretai.2014.12.008>
- Bıçer, D. F., & Erciş, A. (2020). Sosyal medyada viral pazarlama (elektronik ağızdan ağıza) faaliyetlerinin tüketici satın alım niyetine etkileri. *Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 24(3), 1555-1575.
- Boateng, S. L. (2019). Online relationship marketing and customer loyalty: A signaling theory perspective. *International Journal of Bank Marketing*, 37(1), 226-240. <https://doi.org/10.1108/IJBM-01-2018-0009>
- Bone, P. F. (1995). Word-of-mouth effects on short-term and long-term product judgments. *Journal of business research*, 32(3), 213-223. [https://doi.org/10.1016/0148-2963\(94\)00047-1](https://doi.org/10.1016/0148-2963(94)00047-1)
- Brodie, R. J., Ilic, A., Juric, B., & Hollebeek, L. (2013). Consumer engagement in a virtual brand community: An exploratory analysis. *Journal of business research*, 66(1), 105-114. <https://doi.org/10.1016/j.jbusres.2011.07.029>
- Brown, T. A. (2015). Confirmatory factor analysis for applied research. In D. A. Kenny (Ed.), *Methodology in the social sciences* (Second ed.). The Guilford Press.
- Bui, T.-V. (2014). *Social media on-a-stick: A uses and gratification approach toward helping mobile food vendors engage consumers on Instagram* The University of Minnesota.
- Cerin, E., & MacKinnon, D. P. (2008). A commentary on current practice in mediating variable analyses in behavioural nutrition and physical activity. *Public health nutrition*, 12(8), 1182-1188. <https://doi.org/10.1017/S1368980008003649>
- Chatterjee, P. (2001). Online reviews: Do consumers use them? *Advances in Consumer Research*, 28(1), 129-133.
- Cheung, C. M. K., & Lee, M. K. O. (2012). What drives consumers to spread electronic word of mouth in online consumer-opinion platforms. *Decision Support Systems*, 53(1), 218-225. <https://doi.org/10.1016/j.dss.2012.01.015>
- Choi, C. S., Cho, Y.-N., Ko, E., Kim, S. J., Kim, K. H., & Sarkees, M. E. (2019). Corporate sustainability efforts and e-WOM intentions in social platforms. *International Journal of Advertising*, 38(8), 1224-1239. <https://doi.org/10.1080/02650487.2019.1613858>
- Choi, Y. K., Seo, Y., & Yoon, S. (2017). E-WOM messaging on social media: Social ties, temporal distance, and message concreteness. *Internet Research*, 27(3), 495-505. <https://doi.org/10.1108/IntR-07-2016-0198>
- Chu, S. C., & Kim, Y. (2011). Determinants of consumer engagement in electronic word-of-mouth (eWOM) in social networking sites. *International journal of Advertising*, 30(1), 47-75. <https://doi.org/10.2501/IJA-30-1-047-075>
- Chu, S.-C., & Kim, Y. (2011). Determinants of consumer engagement in electronic word-of-mouth (eWOM) in social networking sites. *International Journal of Advertising*, 30(1), 47-75. <https://doi.org/10.2501/IJA-30-1-047-075>

- Chu, S.-C., Lien, C.-H., & Cao, Y. (2019). Electronic word-of-mouth (eWOM) on WeChat: Examining the influence of sense of belonging, need for self-enhancement, and consumer engagement on Chinese travellers' eWOM. *International Journal of Advertising*, 38(1), 26-49. <https://doi.org/10.1080/02650487.2018.1470917>
- Cuong, P. H. (2020). Factors influencing e-WOM online consumer goods purchase behavior: Evidence from Vietnam. *Academy of Entrepreneurship Journal*, 26(2), 1-11. [https://doi.org/10.14505/jarle.v11.2\(48\).05](https://doi.org/10.14505/jarle.v11.2(48).05)
- De Valck, K., Van Bruggen, G. H., & Wierenga, B. (2009). Virtual communities: A marketing perspective. *Decision support systems*, 47(3), 185-203. <https://doi.org/10.1016/j.dss.2009.02.008>
- Deighton, J., & Kornfeld, L. (2009). Interactivity's unanticipated consequences for marketers and marketing. *Journal of Interactive marketing*, 23(1), 4-10. <https://doi.org/10.1016/j.intmar.2008.10.001>
- Demmers, J., Weltevreden, J. W., & van Dolen, W. M. (2020). Consumer engagement with brand posts on social media in consecutive stages of the customer journey. *International Journal of Electronic Commerce*, 24(1), 53-77. <https://doi.org/10.1080/10864415.2019.1683701>
- Devereux, E., Grimmer, L., & Grimmer, M. (2020). Consumer engagement on social media: Evidence from small retailers. *Journal of Consumer Behaviour*, 19(2), 151-159. <https://doi.org/10.1002/cb.1800>
- DiCiccio, T. J., & Efron, B. (1996). Bootstrap confidence intervals. *Statistical science*, 11(3), 189-228. <https://doi.org/10.1214/ss/1032280214>
- Dolan, R., Conduit, J., Fahy, J., & Goodman, S. (2016). Social media engagement behaviour: A uses and gratifications perspective. *Journal of Strategic Marketing*, 24(3/4), 261-277. <https://doi.org/10.1080/0965254X.2015.1095222>
- Elseidi, R. I., & El-Baz, D. (2016). Electronic word of mouth effects on consumers' brand attitudes, brand image and purchase intention: An empirical study in Egypt. *The Business & Management Review*, 7(5), 268-276.
- Fatma, M., Ruiz, A. P., Khan, I., & Rahman, Z. (2020). The effect of CSR engagement on eWOM on social media. *Journal of Organizational Analysis*, 28(4), 941-956. <https://doi.org/10.1108/IJOA-10-2019-1895>
- Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*, 18(3), 382-388. <https://doi.org/10.1177/002224378101800313>
- Froget, J. R. L., Baghestan, A. G., & Asfaranjan, Y. S. (2013). A uses and gratification perspective on social media usage and online marketing. *Middle-East Journal of Scientific Research*, 15(1), 134-145.
- Gao, H., Tate, M., Zhang, H., Chen, S., & Liang, B. (2018). Social media ties strategy in international branding: An application of resource-based theory. *Journal of International Marketing*, 26(3), 45-69. <https://doi.org/10.1509/jim.17.0014>
- Giakoumaki, C., & Krepapa, A. (2020). Brand engagement in self-concept and consumer engagement in social media: The role of the source. *Psychology & Marketing*, 37(3), 457-465. <https://doi.org/10.1002/mar.21312>
- Grewal, R., Cline, T. W., & Davies, A. (2003). Early-entrant advantage, word-of-mouth communication, brand similarity, and the consumer decision-making process. *Journal of Consumer Psychology*, 13(3), 187-197. https://doi.org/10.1207/S15327663JCP1303_01
- 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>
- 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>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate data analysis* (New International ed.). Pearson.
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication monographs*, 76(4), 408-420. <https://doi.org/10.1080/03637750903310360>
- Hayes, A. F. (2018). Partial, conditional, and moderated moderated mediation: Quantification, inference, and interpretation. *Communication monographs*, 85(1), 4-40. <https://doi.org/10.1080/03637751.2017.1352100>

- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115-135. <https://doi.org/10.1007/s11747-014-0403-8>
- Hollebeek, L. D., Glynn, M. S., & Brodie, R. J. (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>
- Hu, L. t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: A multidisciplinary journal*, 6(1), 1-55. <https://doi.org/10.1080/10705519909540118>
- Huang, L.-Y., Hsieh, Y.-J., & Wu, Y.-C. J. (2014). Gratifications and social network service usage: The mediating role of online experience. *Information & Management*, 51(6), 774-782. <https://doi.org/10.1016/j.im.2014.05.004>
- Huang, W. D., Johnson, T. E., & Han, S.-H. C. (2013). Impact of online instructional game features on college students' perceived motivational support and cognitive investment: A structural equation modeling study. *Internet and Higher Education*, 17, 58-68. <https://doi.org/10.1016/j.iheduc.2012.11.004>
- Islam, J. U., & Rahman, Z. (2016). Linking customer engagement to trust and word-of-mouth on Facebook brand communities: An empirical study. *Journal of Internet Commerce*, 15(1), 40-58. <https://doi.org/10.1080/15332861.2015.1124008>
- Kara, T. (2016). Gençler neden snapchat kullanıyor kullanımlar ve doyumlar yaklaşımı üzerinden bir araştırma. *Intermedia International e-Journal*, 3(5), 262-277. <https://doi.org/10.21645/intermedia.2017.14>
- Khan, M. L. (2017). Social media engagement: What motivates user participation and consumption on YouTube? *Computers in human behavior*, 66(1), 236-247. <https://doi.org/10.1016/j.chb.2016.09.024>
- Kim, A. J., & Ko, E. (2012). Do social media marketing activities enhance customer equity? An empirical study of luxury fashion brand. *Journal of Business research*, 65(10), 1480-1486. <https://doi.org/10.1016/j.jbusres.2011.10.014>
- Kim, B., Yoo, M. M., & Yang, W. (2019). Online engagement among restaurant customers: The importance of enhancing flow for social media users. *Journal of Hospitality & Tourism Research*, 44(2), 252-277. <https://doi.org/10.1177/1096348019887202>
- Kim, J. E., Lloyd, S., & Cervellon, M. C. (2016). Narrative-transportation storylines in luxury brand advertising: Motivating consumer engagement. *Journal of Business Research*, 69(1), 304-313. <https://doi.org/10.1016/j.jbusres.2015.08.002>
- Kim, S., Martinez, B., McClure, C. S., & Kim, S. H. (2016). E-WOM intentions towards social media messages. *Atlantic Marketing Journal*, 5(1), 137-154.
- Ko, H., Cho, C.-H., & Roberts, M. S. (2005). Internet uses and gratifications: A structural equation model of interactive advertising. *Journal of Advertising*, 34(2), 57-70. <https://doi.org/10.1080/00913367.2005.10639191>
- Kumar, V., Aksoy, L., Donkers, B., Venkatesan, R., Wiesel, T., & Tillmanns, S. (2010). Undervalued or overvalued customers: Capturing total customer engagement value. *Journal of service research*, 13(3), 297-310. <https://doi.org/10.1177/1094670510375602>
- Lee, K.-T., & Koo, D.-M. (2012). Effects of attribute and valence of e-WOM on message adoption: Moderating roles of subjective knowledge and regulatory focus. *Computers in human behavior*, 28(5), 1974-1984. <https://doi.org/10.1016/j.chb.2012.05.018>
- Lee, S., & Kim, B. G. (2017). The impact of qualities of social network service on the continuance usage intention. *Management Decision*, 55(4), 701-729. <https://doi.org/10.1108/MD-10-2016-0731>
- Leonidas, H., Boutsouki, C., Pigadas, V., & Zotos, Y. (2016). PEER: Looking into consumer engagement in e-WOM through social media. In P. Verlegh, H. Voorveld, & M. Eisend (Eds.), *The digital, the classic, the subtle and the alternative* (6th. ed., pp. 11-24). Springer. https://doi.org/10.1007/978-3-658-10558-7_2
- Levy, M. R., & Windahl, S. (1984). Audience activity and gratifications: A conceptual clarification and exploration. *Communication research*, 11(1), 51-78. <https://doi.org/10.1177/009365084011001003>

- Liang, C.-J., & Wang, W.-H. (2007). Customer relationship management of the information education services industry in Taiwan: Attributes, benefits and relationship. *The Service Industries Journal*, 27(1), 29-46. <https://doi.org/10.1080/02642060601038627>
- Liu, X., Min, Q., & Han, S. (2020). Understanding users' continuous content contribution behaviours on microblogs: An integrated perspective of uses and gratification theory and social influence theory. *Behaviour & Information Technology*, 39(5), 525-543. <https://doi.org/10.1080/0144929X.2019.1603326>
- Liu, X., Shin, H., & Burns, A. C. (2019). Examining the impact of luxury brand's social media marketing on customer engagement: Using big data analytics and natural language processing. *Journal of Business research*, 125, 815-826. <https://doi.org/10.1016/j.jbusres.2019.04.042>
- Livingstone, S. (2004). The challenge of changing audiences: Or, what is the audience researcher to do in the age of the Internet? *European journal of communication*, 19(1), 75-86. <https://doi.org/10.1177/0267323104040695>
- Malhotra, N. K., & Birks, D. F. (2006). *Marketing research: An applied approach* (Updated second European edition ed.). Essex: England: Prentice Hall.
- Malhotra, N. K., & Dash, S. (2106). *Marketing research: An applied orientation* (7th. ed.). Pearson.
- Mochon, D., Johnson, K., Schwartz, J., & Ariely, D. (2017). What are likes worth? A Facebook page field experiment. *Journal of Marketing Research*, 54(2), 306-317. <https://doi.org/10.1509/jmr.15.0409>
- Naylor, R. W., Lamberton, C. P., & West, P. M. (2012). Beyond the "like" button: The impact of mere virtual presence on brand evaluations and purchase intentions in social media settings. *Journal of Marketing*, 76(6), 105-120. <https://doi.org/10.1509/jm.11.0105>
- Okazaki, S., Rubio, N., & Campo, S. (2014). Gossip in social networking sites: Why people chitchat about ad campaigns. *International Journal of Market Research*, 56(3), 317-340. <https://doi.org/10.2501/IJMR-2014-022>
- Omar, N. A., Kassim, A. S., Alam, S. S., & Zainol, Z. (2018). Perceived retailer innovativeness and brand equity: Mediation of consumer engagement. *The Service Industries Journal*, 38, 1-27. <https://doi.org/10.1080/02642069.2018.1548614>
- Orel, F. D., & Arik, A. (2020). Sosyal medya pazarlama faaliyetlerinin çevrimiçi tüketici katılımı ve satın alma niyeti üzerindeki etkisi: Moda markaları örneği. *Erciyes Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 49, 146-161.
- Ortiz, J., Chih, W.-H., & Teng, H.-C. (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>
- Papacharissi, Z., & Mendelson, A. (2011). Toward a new(er) sociability: Uses, gratifications, and social capital on Facebook. In S. Papathanassopoulos (Ed.), *Media perspectives for the 21st century (Communication and society)*. Routledge.
- Rossmann, A., Ranjan, K. R., & Sugathan, P. (2016). Drivers of user engagement in eWoM communication. *Journal of Services Marketing*, 30(5), 541-553. <https://doi.org/10.1108/JSM-01-2015-0013>
- Rossmann, A., Ranjan, K. R., & Sugathan, P. (2016). Drivers of user engagement in eWoM communication. *Journal of Services Marketing*, 30(5), 541-553. <https://doi.org/10.1108/JSM-01-2015-0013>
- Rucker, D. D., Preacher, K. J., Tormala, Z. L., & Petty, R. E. (2011). Mediation analysis in social psychology: Current practices and new recommendations. *Social and Personality Psychology Compass*, 5(6), 359-371. <https://doi.org/10.1111/j.1751-9004.2011.00355.x>
- Ruggiero, T. E. (2000). Uses and gratifications theory in the 21st century. *Mass Communication and Society*, 3(1), 3-37. https://doi.org/10.1207/S15327825MCS0301_02
- Sa'ait, N., Kanyan, A., & Nazrin, M. F. (2016). The effect of e-WOM on customer purchase intention. *International Academic Research Journal of Social Science*, 2(1), 73-80.
- Sashi, C. M., Brynildsen, G., & Bilgihan, A. (2019). Social media, customer engagement and advocacy: An empirical investigation using Twitter data for quick service restaurants. *International Journal of Contemporary Hospitality Management*, 31(3). <https://doi.org/10.1108/IJCHM-02-2018-0108>

- Sawhney, M., Verona, G., & Prandelli, E. (2005). Collaborating to create: The Internet as a platform for customer engagement in product innovation. *Journal of interactive marketing*, 19(4), 4-17. <https://doi.org/10.1002/dir.20046>
- Si, S. (2016). Social media and its role in marketing. *Business and Economics Journal*, 7(1), 203-208.
- Siraj, S. A. (2007). Synthesis of the structure and functions of the uses and gratification model. *European Journal of Scientific Research*, 17(3), 399-408.
- So, K. K. F., King, C., & Sparks, B. (2014). Customer engagement with tourism brands: Scale development and validation. *Journal of Hospitality & Tourism Research*, 38(3), 304-329. <https://doi.org/10.1177/1096348012451456>
- Srivastava, M., & Sivaramakrishnan, S. (2020). Exploring The Triad of eWOM, eWOM Generator Engagement and Consumer Engagement: A Conceptual Framework. *Journal of Management Research*, 20(1). 34-46.
- Strutton, D., Taylor, D. G., & Thompson, K. (2011). Investigating generational differences in e-WOM behaviours: For advertising purposes, does X= Y? *International Journal of Advertising*, 30(4), 559-586. <https://doi.org/10.2501/IJA-30-4-559-586>
- Sun, Y., Gonzalez-Jimenez, H., & Wang, S. (2020). Examining the relationships between e-WOM, consumer ethnocentrism and brand equity. *Journal of Business research*, 1-10. <https://doi.org/10.1016/j.jbusres.2019.09.040>
- Tafesse, W. (2016). An experiential model of consumer engagement in social media. *Journal of Product & Brand Management*. <https://doi.org/10.1108/JPBM-05-2015-0879>
- Thongsri, N., Shen, L., Bao, Y., & Alharbi, I. M. (2018). Integrating UTAUT and UGT to explain behavioural intention to use M-learning: A developing country's perspective. *Journal of Systems and Information Technology*, 20(3), 278-297. <https://doi.org/10.1108/JSIT-11-2017-0107>
- Toor, A., Husnain, M., & Hussain, T. (2017). The impact of social network marketing on consumer purchase intention in Pakistan: Consumer engagement as a mediator. *Asian Journal of Business and Accounting*, 10(1), 167-199.
- Tsimonis, G., & Dimitriadis, S. (2014). Brand strategies in social media. *Marketing Intelligence & Planning*, 32(3), 328-344. <https://doi.org/10.1108/MIP-04-2013-0056>
- Van Doorn, J., Lemon, K. N., Mittal, V., Nass, S., Pick, D., Pirner, P., & Verhoef, P. C. (2010). Customer engagement behavior: Theoretical foundations and research directions. *Journal of service research*, 13(3), 253-266. <https://doi.org/10.1177/1094670510375599>
- Verhoef, P. C., Reinartz, W. J., & Krafft, M. (2010). Customer engagement as a new perspective in customer management. *Journal of service research*, 13(3), 247-252. <https://doi.org/10.1177/1094670510375461>
- Verma, R., Jahn, B., & Kunz, W. (2012). How to transform consumers into fans of your brand. *Journal of Service Management*, 23(3), 344-361. <https://doi.org/10.1108/09564231211248444>
- Vivek, S. D., Beatty, S. E., & Morgan, R. M. (2012). Customer engagement: Exploring customer relationships beyond purchase. *Journal of marketing theory and practice*, 20(2), 122-146. <https://doi.org/10.2753/MTP1069-6679200201>
- Voorhees, C. M., Brady, M. K., Calantone, R., & Ramirez, E. (2016). Discriminant validity testing in marketing: An analysis, causes for concern, and proposed remedies. *Journal of the Academy of Marketing Science*, 44(1), 119-134. <https://doi.org/10.1007/s11747-015-0455-4>
- Wagner, C., & Majchrzak, A. (2006). Enabling customer-centricity using wikis and the wiki way. *Journal of management information systems*, 23(3), 17-43. <https://doi.org/10.2753/MIS0742-1222230302>
- Yayla, H. M. (2018). Kullanımlar ve doyumlar bağlamında Dokuz Eylül Üniversitesi Güzel Sanatlar Fakültesi öğrencilerinin sosyal medya kullanımı: Instagram örneği. *Selçuk İletişim*, 11(1), 40-65. <https://doi.org/10.18094/josc.346756>
- Yoo, C. W., Sanders, G. L., & Moon, J. (2013). Exploring the effect of e-WOM participation on e-Loyalty in e-commerce. *Decision Support Systems*, 55(3), 669-678. <https://doi.org/10.1016/j.dss.2013.02.001>
- Yoon, S.-J. (2012). A social network approach to the influences of shopping experiences on e-WOM. *Journal of Electronic Commerce Research*, 13(3), 213-223.

Zaltman, G. (2003). *Tüketici nasıl düşünür* (A. S. Koç, Trans.). Mediacat Kitapları.

Zhang, M., Hu, M., Guo, L., & Liu, W. (2017). Understanding relationships among customer experience, engagement, and word-of-mouth intention on online brand communities. *Internet Research*, 27(4), 839-857. <https://doi.org/10.1108/IntR-06-2016-0148>

Zhao, X., Lynch Jr, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research*, 37(2), 197-206. <https://doi.org/10.1086/651257>