

## RESEARCH ARTICLE

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## Identifying and Validating the Factors Affecting Online Social Media Marketing about Consumer Buying Behavior

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### Abstract

Online social media is an important innovation that has attracted individuals and companies. The purpose of this study is to "develop an online social media marketing model about consumer buying behavior". This utilizes a mixed-method (qualitative and quantitative). This study uses the research literature to extract the indicators, then, finalizes them by the Delphi technique in three different rounds. The study develops the qualitative model of the research based on the opinions of 20 experts as well as the application of Interpretive Structural Modelling (ISM) and MICMAC analysis. In the quantitative part, the study uses the Partial Least Squares (PLS) technique to implement SEM, validate, and test the predictive relevance of the initial model. This study applies Cohen's formula and determines 460 individuals as sample. The sampling method is non-probability. Furthermore, the statistical population of the study consists of online social media users from all over Iran. In this study, 9 key factors have been identified, modeled and analyzed. According to the MICMAC analysis results, perceived security (with the highest driving power) is identified as the driving indicator, and value co-creation (with the highest dependence) is identified as the result or target indicator. The ISM based model is validated using SEM and 15 hypotheses were checked using SEM-PLS technique, also all hypotheses except the second hypothesis were confirmed. Finally the findings confirmed Goodness of Fitness and ideal predictive relevance of the model.

**Keywords:** Online Social Media Marketing, Consumer Buying Behaviour, Interpretive Structural Modelling (ISM), MICMAC Analysis

### Introduction

Recently, there is a change in consumer buying behavior consumer buying behavior due to existence of various electronic marketing tools (Jashari & Rrustemi, 2016; Purwar, 2019). Access to the Internet is easy, so people use the Internet and online social media as digital marketing tools to meet their personal and work programs, which changes the consumer behavior (Atienza, 2019; Bank et al., 2019; Dedeoğlu et al., 2020). They have easy and timely access to any information from all around the world, and behave based on the information they receive from these various tools (Ertemel & Ammoura, 2016; Vinerean et al., 2013; Voramontri & Klieb, 2019). Widespread availability of

information through a variety of online social media prepares consumers with knowledge and power. They can evaluate information and buy the best product or service with the highest utility. Meanwhile, the digital environment creates new opportunities for companies to achieve their marketing goals and adopt their strategies through various activities, as well as to expand bilateral relationships with their partners and customers (Talikoti, 2019; Tseng & Wei, 2020). By January 2021, there were 4 billion and 660 million Internet users worldwide and it is predicted this number is growing steadily (Datareportal, 2021). Due to the growing popularity of online social media, different

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businesses need to consider various aspects of consumer buying behavior and adopt good marketing strategies to increase their share of existence markets in competitive environment (Appel et al., 2020; Vinerean et al., 2013).

In general, studies show that the use of online social networks has significant effects on various parts of modern marketing. Furthermore, it plays a crucial role in marketing, brand loyalty and customer relations, and thus affects consumer satisfaction (Bank et al., 2019; Jacobson et al., 2020).

In recent years, Iran is witnessing a substantial growth in the use of online social media. The popularity of such media has constantly increased among Iranian users. More than 60 million people in the country use the third and fourth generation Internet (more than 70% of the population). The economic issues caused by social issues (Corona crisis), with 24%, attract the most attention of online social media users. In addition, the cultural, sports and scientific issues are in lower ranks (kavan, 2020). Currently, more than 50 million active users of social media there are in our country, and about 49% of them use various platforms to meet their shopping needs online. Filtering and restricting online social networks such as Telegram do not reduce the engagement of people in such media, but increases it in an incredible way (Eghtesad online, 2020). According to official statistics, Iran ranks the world's seventh Instagram user. Telegram has more than 50 million users in Iran. Considering the important role of online social media in shaping the buying behavior of Iranian consumers, the main purpose of this study is to focus on developing and validating online social media marketing model about consumer buying behavior. This research studies the literature and opinions of experts to extract the factors affecting the buying behavior of consumers who try to meet their shopping needs through online social media. First, this study uses the ISM method to develop a good model and, then, use the SEM approach to test and validate this model.

The paper provides an insight into the modeling and analysis of consumer buying behavior variables in social media marketing. Another advantage of this study is the use of qualitative approaches in model development, which increased integrity of the proposed model and develops a statistically validated contextual model showing hierarchies and relationships of the factors. Also the ISM model developed in this paper provides the managers with

an opportunity to understand the driving and the dependence power of the factors.

## Literature Review

Social media marketing is marketing that focuses on people, not products (Majidian et al., 2021). Social media marketing (SMM) refers to the commercial behavior initiated and accomplished via social media (Yang & Che, 2020). In recent years, various types of social media have become very popular worldwide (Hanaysha, 2021) and have encouraged leading companies to use these valuable tools more. The unique aspects of social media and their unparalleled popularity have revolutionized marketing practices such as advertising and sales promotion (Durai & King, 2015; Sabri, 2019; Zhang et al., 2022). The concept of social media is a combination of two words: "social" and "media". Social, here, refers to the interaction between members of a group or even a community with common interests and media, channels or platforms that allow the creation and exchange of user-generated content (Chawla & Chodak, 2021). Therefore, companies should implement their marketing activities and create more relationships with consumers based on trust and compassion. Furthermore, they should form various campaigns to cover the needs and desires of users (consumers) operating in social media as well as to identify the consumers' needs before they do and meet them (Ayswarya et al., 2019; Chen & Lin, 2019; Dolega et al., 2021; Koga, 2019).

Due to the significant of studying consumer behavior that is the main part of any company's marketing strategy, a thorough and comprehensive study of all its aspects plays an essential role in the success of an organization. In the literature, consumer buying behavior is known as a very complex concept that arises from the interaction between consumers and their environments. So, consumer buying behavior is driven by a wide range of factors or motivations (Vázquez-Martínez et al., 2021). Buying behavior refers to the decision process and acts of people engaged in buying and using products (Sharma, 2014). Studying consumer behavior develops a general model of buying behavior that depicts the processes used by consumers in buying decisions. These models are very important for marketers because they can explain and predict consumer buying behavior (Rahman et al., 2018).

## Research Background

Khodayari and Panjeh Shahi (2020) conducted their research entitled “The effective factors of social media marketing on consumer buying behavior in Ghahreman Company” qualitatively (grounded theory). They studied factors affecting the buying behavior of consumers in social networks. The statistical population included all the customers of Ghahreman Company in the country and the size of the statistical population was considered unlimited. Using non-probability sampling method the population was selected from the customers of Ghahreman Sports Company stores to interview and observe their behavior. According to the results of the research, running advertising campaigns on social networks whose mobile application is more popular (such as Instagram) leads to more and faster success in most cases. Dehdashti et al., (2019) in their research entitled “The role of social and cultural factors in consumer buying behavior in social networks”. Used a mixed method of quantity and quality to investigate the role of social and cultural factors that affect clothing purchase through social networks. In the qualitative part, data were collected and analyzed using grounded theory method and through interviews with vendors operating in social networks. In the quantitative part, based on the initial model, a questionnaire was developed and distributed to 385 clothing buyers operating in social networks. They have used SEM to analyze the data, and Sobel test to examine the mediating role. The results showed that friends' advice, approval of others and social conditions have a significant effect on people's trust in social networks and also people's trust has a significant effect on consumers' desire to buy clothes through social networks.

Alam et al., (2016) in their research with the title and purpose of “Designing a social media marketing model for Iranian Premier League clubs” used the grounded theory. Data was gathered through interviewing with 19 top media managers, faculty members of sport marketing, marketing and information technology executives in league organization, media and marketing executives in football clubs, and social media experts that selected by judgement sampling. The data were analyzed according to the open, axial, and selective coding. Through the three coding phase, categories and subcategories of social media marketing of football clubs were identified and related to each other.

In a research, which was conducted using a mixed method called “COVID-19 ads on purchase intention of online consumer behavior as business innovation activity: A contribution to the uses and gratification theory”, Mejía-Trejo (2021) first formed the Delphi panel and focus group. The panel members included three digital marketing professors and 3 CEOs of digital marketing agencies to identify the factors affecting the intention of consumers to buy online. In the quantitative part, data analysis of 400 online consumers in Mexico was performed by SEM and factor analysis, which led to the developing three innovative business solution models that can be used by companies as a marketing strategy regarding online purchase intention of the consumer. Liao et al., (2021) also conducted a qualitative study entitled “Investigating online social media users' behaviors for social commerce recommendations” in Taiwan. Their research method was data mining by cluster analysis and correlation-based law analysis. According to the findings, all the people in 3 groups, as the sample, used platforms such as Facebook, Instagram, Line, Messenger, and YouTube to communicate with consumers in businesses. In addition, for all three groups, the perceived ease of use of platform was the most important factor in choosing an online social media. In 2021, in a study entitled “Do social media platforms develop consumer panic buying during the fear of Covid-19 pandemic”, Naeem used the inductive reasoning approach to collect data from 34 British consumers who had at least one account on various social media platforms that were contacted through telephonic interview. His findings show that one of the main reasons for the development of panic buying behavior is the social interpretation of expert advice as well as the communication of social media users by sharing pictures, videos, and posts regarding the empty shelves of supermarkets on various media platforms. Reaction for avoiding this danger that threatens the world community manifests itself in the form of storage of goods by consumers.

Zollo et al., (2020) in their research, which was developed based on a quantitative method and entitled “Unpacking the relationship between social media marketing and brand equity: The mediating role of consumers' benefits and experience”, used SEM (PLS technique) to analyze data related to 326 followers of luxury brands. Their findings showed that cognitive benefits, personal integration, and



social integration benefits mediate the relationship between social media management and brand value, but it is not true for hedonistic benefits. Similarly, Li et al. (2020) conducted “The role of corporate credibility and bandwagon cues in sponsored social media advertising” in a quantitative study with 207 students from two universities in the United States and an online survey on Twitter with a 7-point Likert scale questionnaire. According to the findings, the company's credibility can affect the effectiveness of advertising on social networks and, consequently, consumer perception.

Zhao et al., (2019), in their research entitled “Social media and Chinese consumers' environmentally sustainable apparel purchase intentions”, used 238 responses collected by a Chinese research firm in 2016. In the next step, they used exploratory factor analysis and, then, applied SEM to test the hypotheses. To test the significance of the mediating effects they also used the bootstrap method of the original data to calculate the indirect effects. The findings of this study support the previous literature and show that a positive attitude towards buying behavior sustainable with the environment is increasing because Chinese consumers are educated on social and environmental issues. Similarly, the results of the analysis showed that the Chinese consumers' engagement with social media and their peers has significant social effects that are directly related to increasing the goals of sustainable clothing purchase.

Alalwan (2018), in a research entitled “Investigating the impact of social media advertising features on customer purchase intention”, used the SEM method. The data were collected and analyzed by a researcher-made questionnaire with a range of 7 Likert options from a statistical population of 600 individuals and by non-probability (convenience) sampling method in Jordan. Results of this research confirm the significant effect of performance expectation, hedonistic motivation, interaction, perceived information and communication on the consumer's buying intention. Marino and Presti (2018) collected data from an online survey of 860 individuals with a university degree in Italy. The results of their research were published under the title “Engagement, satisfaction and customer behavior-based CRM performance: An empirical study of mobile instant messaging”. Their findings showed that the dimension of cognitive interaction and the dimension of emotional interaction affect the

level of satisfaction, but only the dimension of emotional interaction affects the behavior-based Customer Relationship Management (CRM) performance. While social interaction does not affect CRM performance and satisfaction. In addition, their study confirmed the relationship between customer satisfaction and behavior based on relationship performance.

In 2017, Hanaysha in a study entitled “An examination of the factors affecting consumer's purchase decision in the Malaysian retail market” studied consumer buying behavior. Hanisheh used quantitative research method and collected the data from 278 customers of retail stores in Malaysia and applied Structural Equation Modelling. The findings show that corporate social responsibility has a positive effect on buying decision, while sales promotion has a negative effect on buying decision. The results of this study also indicated that the store environment has a positive effect on consumer buying decisions. Contrary to the researcher's expectations, the findings showed that the impact of social media marketing on buying decision was negligible and perceived value had a positive effect on consumer decision making.

According to research literature, topics of online social media are among the topics of interest to researchers. Today, due to the emergence of various innovations in the field of online social media and the greater importance of this during the Covid-19 pandemic, companies' attention to marketing strategies has increased more than ever. Developing a local model for online social media marketing in Iran, using a mixed method (quantitative and qualitative) by the ISM method (instead of grounded theory) that is not limited to specific brands or platforms, as well as identifying type of indicators in terms of driving and dependence and describing their relationship, has not yet been approached enough. Therefore, to cover some of the shortcomings in this area, the researchers extract and confirm various indicators by local experts, level them, develop a structural model and validate it. In addition, this study used the Cohen formula to determine the number of samples required to implement SEM, which can be considered as a kind of research innovation, because SEM is used in many research. The researchers use Morgan tables or Cochran's formula to determine the number of samples, which is not correct based on the opinion of professors of statistics and should use newer calculation methods

such as Cohen's formula or considering minimum 5 and maximum 15 times more than the number of questionnaire items to determine the number of samples. The present study used Cohen's formula to calculate the minimum number of samples.

### Research Methodology

The present study is fundamental-applied in terms of research objectives. It is fundamental because it leads to developing a new model in the field under study. It is an applied research, because the results of validating the above model can be used to advance the goals of businesses operating in the online social media platforms. In terms of type and method of data collection, it can be considered as a descriptive-survey research because it has conducted through library studies and uses a questionnaire as a data collection tool. In addition, in terms of research method, it is considered as a mixed research, because this used ISM in the initial part of the study and to develop the online social media marketing model in

relation to consumer buying behavior, and SEM in the next step to test the hypotheses and measure the model strength.

### Step 1: Library Studies and Running Delphi Techniques

The researchers studied books and articles about the research topic to collect data (such as Emerald Insight, Science Direct, .Springer, Research Gate,...). They collected the factors extracted from the literature review. They used the Delphi panel consisted of 15 university professors (with at least five years of experience in teaching marketing )and experts in the field of social media marketing (such as active marketing managers in the field of online social media with at least five years of experience), who were selected by purposeful sampling to analyze the data. In 3 rounds, the researchers calculated the Kendall coefficient and screened indicators to determine the adequacy of the performed rounds.

Table 1.

#### Factors Extracted from Research Literature

N	Factors	Researchers
1	E. Word of mouth	Srivastava et al(2021), Bismoaziiz et al(2021), Frempong et al(2020), Mishra & Satish(2016),Whiting et al(2019)
2	Cnsumer engagement	Srivastava & Sivaramakrishnan(2021), Wařkowski & Jasiulewicz(2021), Harun & Husin(2019),Rather et al(2019), Hollebeek & Macky(2019)
3	Trust	Wagner et al(2020), Agyei et al(2020), Than & Binh(2020), Phan et al(2020), Konuk(2019)
4	Satisfaction	Zaid & Patwayati(2021), Cambra Fierro et al(2021),Jindger(2020), Thakur(2019), Al Dmour et al(2019)
5	Value equity	Hultman et al(2019), Hutagalung & Situmorang (2018), Kim & Ko(2012)
6	Brand awareness	Gallart-Camahort et al(2021),Vanitha & Subramanian(2020), Park et al(2020), Dabbous & Barakat(2020), Steinpórsson & Alfređóttir(2018)
7	Valui co- creation	Moghadamzadeh et al(2020), Nadeem & Al-Imamy(2020), Nadeem et al(2020), Liu et al(2020), Bassano et al(2020)
8	Perceived usefulness	Wagner et al(2020), Cho & Son(2019), Bianchi & Andrewz(2018), Shang et al(2017), Park & Gretzel(2010)
9	Perceived enjoyment	Kamis & Ramlee(2021), Winarno et al(2021), Cho & Son(2019), Harb et al(2019), Cha(2009)
10	Perceived ease of use	Wilson et al(2021), Eneizan et al(2020), Than & Binh(2020), Puspitasari et al(2019), Pratama et al(2019)
11	Perceived security	Marianus & Ali(2021), Wilson et al(2021), Kahar et al(2019), Souza & Baldanza(2018), Oktavika(2018)
12	Price	Azzari & Pelissari(2020), Oh(2020), Isa et al(2018), Sulaiman et al(2017), Amoroso & Watanabe(2011)
13	Privacy	Epstein & Quinn(2020), Dehghanpouri et al(2020), Quinn et al(2019), Hollenbaugh(2019)
14	Cost	Kumar et al (2019)
15	Perceived risk	Zhu & Kanjanamekanant(2020), Tsai et al(2020), Seo & Park(2018), Torres(2018)

Table 2.  
*Experts' information and characteristics*

Item	category	F	Item	category	F	Item	category	F
education	Bachelor	1	Age	Below 35	2	S. M. Marketing work experience	5 to 10 years	2
	Master	10		35 to 50	10		11 to 15 years	12
	PhD	9		Up 50	8		More than 15 years	6
S.M.	5 to 10 years	2	gender	Women	7			
Marketing teaching experience	11 to 15 years	13		Men	13			
	More than 15 years	5						

Table 3.  
*Results of different rounds of Delphi*

N	Factors	The first round			The second round			The Third round		
		Mean	Std	Kendall coefficient	Mean	Std	Kendall coefficient	Mean	Std	Kendall coefficient
1	E- WOM	4/466	0/498		4/13	0/718		4/06	0/771	
2	Consumer engagement	4/2	0/747		4/33	0/596		3/66	0/788	
3	Trust	4/133	0/884		3/933	0/928		3/73	0/997	
4	Satisfaction	4/466	0/618		4/06	0/573		4	0/816	
5	Value equity	3/33	0/596		3/86	0/956		1/53	0/498	
6	Brand awareness	3/6	1/08		3/73	0/928		4/13	0/618	
7	Value co- creation	3/133	0/718	<b>0/630</b>	4/26	0/771	<b>0/774</b>	3/86	0/618	<b>0/833</b>
8	Perceived usefulness	3/2	0/832		1/33	0/928		-	-	
9	Perceived enjoyment	3/266	1/06		3/73	0/771		-	-	
10	Perceived ease to use	3/4	1/08		3/93	0/771		3/73	0/928	
11	Perceived security	3/733	1/33		4/06	0/573		3/46	0/884	
12	Price	4/133	1/02		4/26	0/679		4/06	0/771	
13	Privacy	3/6	1/08		-	-		-	-	
14	Cost	3/4	1/08		-	-		-	-	
15	Perceived risk	1/6	0/489		-	-		-	-	

In the first round, based on the opinion of a number of professors, the researchers identified the factors of perceived security and privacy as well as of price and cost as same, conceptually. The researchers replaced perceived security and price factors and removed privacy factors and cost. They removed the perceived risk factor from the questionnaire because its mean was less than three (based on 5-point Likert). Based on the results of the second round of Delphi, the experts determined that the factors of perceived usefulness and perceived enjoyment were conceptually and functionally same. They excluded perceived enjoyment factor (based on experts' opinion), and removed the factor of perceived usefulness due to its mean, which was less

than three. They removed the equity value factor due to its mean, which was less than three and ended third round of the Delphi technique. They confirmed all other factors with a mean of more than three. At this stage, the experts did not announce other similar factors. According to the above-mentioned, the researchers calculated Kendall coordination coefficient to ensure the adequacy of Delphi technique's rounds.

Based on the results of calculating the Kendall coefficient there was 63%, 77%, and 83% consensus among the participants to confirm the final factors in the first, second, and third rounds, respectively. Since the test is calculated based on 95% confidence and 5% error in SPSS software and a significant

level or zero error level is obtained in this test, 95% consensus on the factors is confirmed.

Table 4.

*Final factors during Delphi technique*

N	Factors	N	Factors
V1	E- WOM	V6	Value co-creation
V2	Consumer engagement	V7	Perceived ease of use
V3	Trust	V8	Perceived security
V4	Satisfaction	V9	Price
V5	Brand awareness		

**Step 2: Interpretive structural modeling (ISM)**

For the first time, John N. Warfield proposed ISM technique in 1973 to identify the relationships among various affecting factors in complex socio-economic systems (Xu & Zou, 2020). This method is a qualitative mathematical method (Peikani et al, 2020). An interactive process that uses the opinions of experts in the related field and simplifies a complex problem to smaller infrastructure factors. It helps to understand the direct and indirect relationships between variables affecting the system (Hashemi Petrudi et al., 2020; Mondal & Chakrabarti, 2021; Tamtam & Leagile, 2021). The procedure of ISM method is as follows: First, the researchers used the factors screened by Delphi technique in the VOXA quality questionnaire and asked 20 experts and specialists to complete it according to the questionnaire instructions.

Table 5.

*Final reachability matrix*

	V1	V2	V3	V4	V5	V6	V7	V8	V9	Driving power
V1	*1	1	*1	1	1	1	0	0	0	6
V2	0	*1	0	0	0	1	0	0	0	2
V3	1	1	*1	1	*1	1	0	0	0	6
V4	1	*1	*1	*1	*1	*1	0	0	0	6
V5	*1	*1	1	1	*1	*1	0	0	0	6
V6	0	0	0	0	0	*1	0	0	0	1
V7	1	1	*1	1	*1	1	*1	0	0	7
V8	1	1	1	1	*1	1	1	*1	0	8
V9	1	*1	*1	1	*1	1	0	0	*1	7
Dependence power	7	8	7	7	7	9	2	1	1	

In the next step, the researchers leveled the factors and determined the relationships among them. In other words, they identified the input and output sets of each criterion.

V: Factor i leads to factor j (i will influence j).

O: Factor i and j are unrelated.

X: Represents a bidirectional relationship (i and j will influence each other).

A: Factor j leads to factor i (Ghalamsiah & Seyedhosseini, 2020).

The researchers used ISM method to collect the questionnaires. Then, they identified the relationship that had the highest frequency based on the opinion of experts and included it in the final table. They converted the above symbols to numbers including zero and one and considered the following conditions to create the initial access matrix.

a. If the entry of (i, j) in the SSIM is 'V' then the (i, j) value in the reachability matrix will be '1' and the (j, i) value becomes '0'.

b. If the entry of (i, j) in the SSIM is 'A' then the value of (i, j) in the reachability matrix becomes '0' and the value of (j, i) will be '1'.

c. If the entry of (i, j) in the SSIM is 'X' the value of (i, j) and (j, i) in the reachability matrix will be '1'.

d. If the entry of (i, j) in the SSIM is 'O' then the value of (i, j) and (j, i) in the reachability matrix becomes '0' (Bakhtari et al., 2020; Kota et al., 2021; Menon & Ravi, 2021).

The researchers analyzed internal compatibility of the access matrix. If (A, B) are related and (B, C) are related; then (A, C) are related (Damoori et al., 2020; Kanji & Agrawal, 2020). Following this and carefully examining the relationships, they created final access matrix, as it is shown in Table 5.

Reachability set (outputs): the reachability set of an individual factor consists of other elements and itself, which it may help achieve and can be identified with the "1s" in the relevant row. The



antecedent set (inputs) comprises of the factors themselves and the other factors, which may assist in making it and can be identified with the "1s" in the relevant column (Prasad et al., 2020; Sehgal & Nasim, 2018).

Then, the researchers identified common input and output sets for each of the variables. They considered the variables whose output and common sets were

exactly the same as top-level ones in the ISM hierarchy. Therefore, they separated this factor from other factors for the next leveling process. They continued this repetition of process of leveling (in this study, they repeated it 5 times) until they determined levels of all factors (Ahmad et al., 2019; Jain & Raj, 2016; Alawamleh & Popplewell, 2011).

Table 6.

*Final Iterations (Level of Factors)*

	Reachability Set	Antecedent Set	Intersection (Common) Set	Level
V1	1,3,4,5	1,3,4,5,7,8,9	1,3,4,5	3
V2	2	1,2,3,4,5,7,8,9	2	2
V3	1,3,4,5	1,3,4,5,7,8,9	1,3,4,5	3
V4	1,3,4,5	1,3,4,5,7,8,9	1,3,4,5	3
V5	1,3,4,5	1,3,4,5,7,8,9	1,3,4,5	3
V6	6	1,2,3,4,5,6,7,9	465	1
V7	7	7,8	7	4
V8	8	8	8	5
V9	9	9	9	4

After determining the level of each factor, they displayed the Interpretive Structural Modeling in Figure 1. According to ISM principles, factors that were at higher levels had less influence on other factors and were dependent on other factors. In the

developed interpretive model, the factor of the value co-creation at level one was the most effected and the perceived security factor at level five was the most affecting factor.

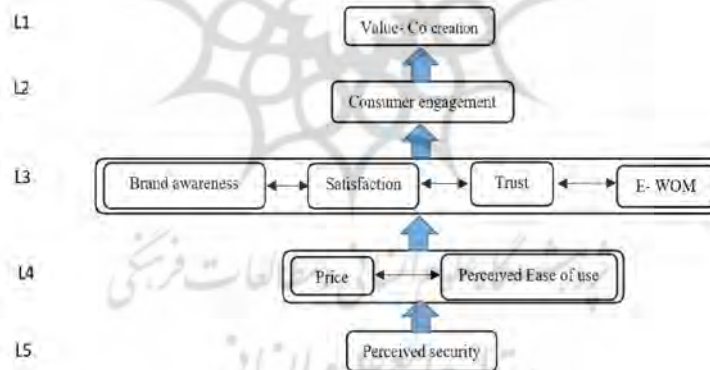


Figure 1. *Interpretive structural model of online social media marketing according to consumer buying behavior*

### MICMAC Analysis

As the last step of the ISM and after developing the qualitative model, the researchers used MICMAC analysis and determined the role of each variable and their driving power and dependence power. As shown in Figure 2, they distinguished this matrix into four different quadrants that represented the roles of factors in each part, including

autonomous, dependent, linkage and Independent (driving) roles. Autonomous variables with the least driving and dependence power were relatively disconnected to the whole system and had little and weak connection with the system. Dependent variables had low driving power and relatively high dependence power and were called outcome or target variables. Linkage variables had high driving and



dependence power. These variables were unstable in nature because any step taken on them (such as system feedback) can affect the whole system. Independent (driving) variables were also variables

with high driving power and low dependence power. Such indicators had a significant effect on other indicators (Kinker et al., 2019; Pitchaimuthu et al., 2019; Sindhu et al., 2016).

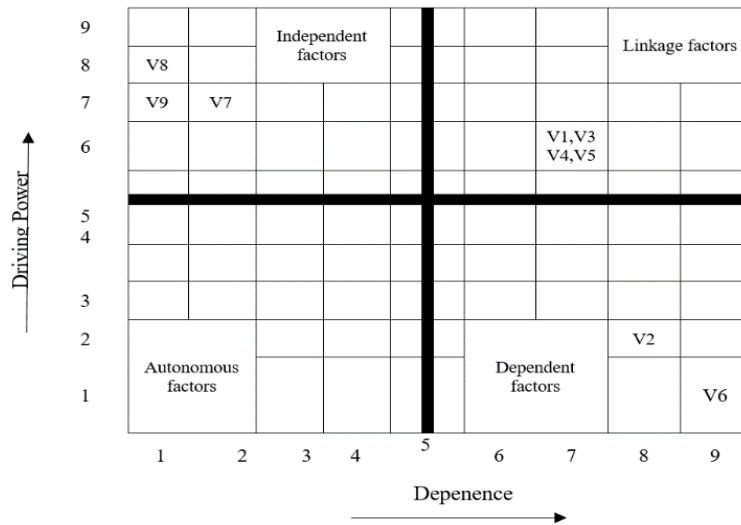


Figure 2. Clusters of variables

As shown in Figure 2, 9 factors in the developed quality model were positioned in three different parts of the MICMAC diagram. There were no dependent, linkage and driving parts (independent) and no factor in the autonomous quadrant. This emphasized the importance of all factors in developing the qualitative model, because the variables that were positioned in the autonomous part did not have a specific effect in terms of driving power and dependence power. These variables are practically known as redundant variables. Factors of value co-creation and consumer engagement with the highest dependence and the least driving power were positioned in the dependent part of this diagram. In addition, the variable of value co-creation with 9 units of dependency power was the target or outcome variable.

In addition, the variables of EWOM, trust, satisfaction and brand awareness with driving power and dependence power more than average were in the range of linkage variables. Figure 2 showed that these factors were closest to the strategic line and required more attention of strategic planners because any step taken on them will affect whole marketing system of company. The factors including perceived security and price were categorized as independent variables. The perceived security had highest driving

power and lowest dependency power and was the most autonomous factor among all factors in the model developed.

## Research Findings

### Step 3: Structural Equation Modelling (SEM)

According to the developed model (Figure 1), the researchers used the SEM-PLS method to test the model. In this section, the researchers prepared a researcher-made questionnaire containing 9 variables and 31 questions (The questionnaire uses a 5-point Likert scale from strongly disagree to strongly agree). The statistical population included all consumers who buy online through a variety of existence-hid platforms in the country. The sampling method, according to the statistical population, was the non-probability. The study background indicates that non-probability is a common method for Internet surveys. The sample size was 460 individuals that determined online and based on (Effect size) or (Cohen's formula)<sup>2</sup>. The management of collecting the answers was not very difficult because the researchers shared the questionnaire on online social media platform. The respondents completed 466 questionnaires and returned to the researchers. The researchers used the Smart PLS 3 software to analyze the data.

**Outer Model (Confirmatory Factor Analysis)**

Confirmatory factor analysis is used to measure the relationships between each latent (hidden) variable and its related items. A researcher cannot test the research hypotheses until the questionnaire questions verified that the hidden variables are well

measured. Therefore, the researchers used confirmatory factor analysis to verify that the data were scaled appropriately. The factor loading represented the strength of the relationship between a hidden variable and an observable variable. The value of factor loading varied between 0 and 1.

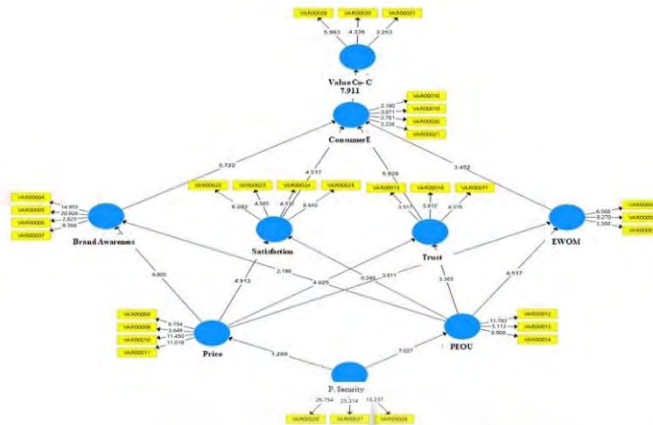


Figure 3. Outer model of research

Many researchers consider the acceptable value for the factor loading to be 0.3, some 0.35, and some 0.4 or higher (Plucker, 2003). In the present study, all factor loadings had a value higher than 0.34,

which represented that the correlation between hidden variables (dimensions of each of the main structures) with observable variables was acceptable.

Table 7. Values of Factor Loading and t-Statistics

Factors	Item	Factor Loading	t-Statistics
EWOM	VAR00001	0.626	3.388
	VAR00002	0.772	6.568
	VAR00003	0.854	8.270
	VAR00004	0.797	14.955
Brand awareness	VAR00005	0.806	20.926
	VAR00006	0.454	2.825
	VAR00007	0.744	9.368
	VAR00008	0.641	6.754
Price	VAR00009	0.580	3.649
	VAR00010	0.752	11.450
	VAR00011	0.762	11.018
Perceived ease of use	VAR00012	0.739	11.783
	VAR00013	0.630	5.113
	VAR00014	0.721	8.908
Trust	VAR00015	0.729	3.517
	VAR00016	0.809	5.812
	VAR00017	0.753	4.376
Consumer engagement	VAR00018	0.571	2.180
	VAR00019	0.611	3.071
	VAR00020	0.627	2.761

Factors	Item	Factor Loading	t-Statistics
Satisfaction	VAR00021	0.690	3.236
	VAR00022	0.345	6.282
	VAR00023	0.611	4.585
	VAR00024	0.682	4.312
	VAR00025	0.791	8.643
Perceived security	VAR00026	0.836	26.754
	VAR00027	0.857	25.314
	VAR00028	0.805	13.237
Value co- creation	VAR00029	0.860	5.983
	VAR00030	0.758	4.336
	VAR00031	0.544	3.263

Based on the results, the measurement indicators of each of the scales used at the 5% confidence level, the t-value statistic was greater than 1.96, which indicated that the observed correlations were significant. Therefore, each main variable has been measured correctly.

### Validity and Reliability of the Model

We tested convergent validity by looking at factor loading values and average variance extracted (AVE), and reliability by calculating composite reliability (CR), Dillon–Goldstein’s (Rho) and Cronbach’s alpha.

Table 8.

*Convergent validity and reliability of research variables*

Factors	Cronbach’s alpha	AVE	CR	Rho	R <sup>2</sup>
EWOM	0.726	0.563	0.816	0.730	0.659
Brand awareness	0.722	0.519	0.853	0.761	0.477
Price	0.738	0.534	0.740	0.793	0.480
Perceived ease of use	0.764	0.538	0.755	0.754	0.349
Trust	0.865	0.530	0.801	0.765	0.450
Consumer engagement	0.790	0.566	0.852	0.814	0.455
Satisfaction	0.737	0.601	0.782	0.785	0.304
Perceived security	0.844	0.627	0.764	0.751	-
Value co- creation	0.825	0.633	0.758	0.769	0.700

### General Fitting of the Developed Model

This criterion belongs to the general part of structural equation models. After examining the fitting of the measurement part and the structural part of the general research model, a researcher can use this criterion and analyze the fitting of the general part. (Tenenhaus et al., 2005) proposed the Goodness of Fit (GOF) criterion. It is calculated according to the following formula:

$$GOF = \sqrt{Avg(\text{Communalities}) \times R^2}$$

Communalities term indicates the mean of the common values found in a particular structure and R<sup>2</sup> is the mean of the explained variance of the model's endogenous structures. (Wetzels et al.,

2009) identified three values, 0.01, 0.025, and 0.36, as weak, moderate, and strong values for GOF. Calculating GOF index:

$$Avg(R^2) = 0.484$$

$$GOF = \sqrt{0.712 \times 0.484} = 0.587$$

According to the value obtained from the calculation of the GOF index, the researchers also confirmed the model.

### Testing Hypotheses

The researchers used the PLS technique and Smart PLS 3 software to test the hypotheses, and presented the results in Table 9.

Table 9.  
*The Results of Hypothesis Testing*

N	Hypothesis	Path coefficient	T-statistic	sig level	result
1	Perceived security has a significant and positive effect on perceived ease of use	0.591	7.027	0.000	Supported
2	Perceived security has a significant and positive effect on price.	0.230	1.269	0.087	Not Supported
3	Perceived ease of use has a significant and positive effect on E-WOM.	0.596	4.517	0.000	Supported
4	Perceived ease of use has a significant and positive effect on trust.	0.463	3.365	0.000	Supported
5	Perceived ease of use has a significant and positive effect on satisfaction.	0.546	6.249	0.000	Supported
6	Perceived ease of use has a significant and positive effect on brand awareness.	0.511	2.198	0.000	Supported
7	Price has a significant and positive effect on E-WOM.	0.433	3.611	0.000	Supported
8	Price has a significant and positive effect on trust.	0.628	4.825	0.000	Supported
9	Price has a significant and positive effect on satisfaction.	0.484	4.913	0.000	Supported
10	Price has a significant and positive effect on brand awareness.	0.507	4.805	0.000	Supported
11	E-WOM has a significant and positive effect on consumer engagement.	0.529	3.452	0.000	Supported
12	Trust has a significant and positive effect on consumer engagement.	0.419	5.928	0.000	Supported
13	Satisfaction has a significant and positive effect on consumer engagement.	0.546	4.517	0.000	Supported
14	Brand awareness has a significant and positive effect on consumer engagement.	0.604	5.722	0.000	Supported
15	Consumer engagement has a significant and positive effect on value co- creation.	0.428	4.911	0.000	Supported

Based on the results, the path coefficient in all hypotheses except the second hypothesis was higher than 0.3. In the second hypothesis, which examined the effect of perceived security on price, the path coefficient was less than 0.3. In all hypotheses except the second hypothesis, the significance level was less than 0.05 (0.000). Therefore, 0.95 confidence coefficient indicated that all hypotheses except the second hypothesis were confirmed.

## Conclusion

Online social media is an important innovation that has attracted individuals and companies. Sharing knowledge and different ideas enables companies to be aware of the opinions of their consumers of any race, culture and country. On the other hand, ordinary people as customers of goods and services in these online platforms are strongly influenced by a variety of marketing strategies of companies and even other consumers. Using factors

that drive the general public, who are active in the buying process in various social media platforms, and encourage them to buy can certainly prove to be the trump card of companies against their competitors. The researchers, first, identified the factors that were important in the field of online social media marketing about consumer buying behavior, and, then used the panel of experts Delphi, to confirm and finalize the most important factors. Then, they used ISM to identify the relationship and level of these factors as well as to develop a qualitative model. Finally, they used the SEM to validate the predictive relevance of the model and GOF of the model.

The researchers conducted this research in both qualitative and quantitative stages. Findings of the initial phase and of the MICMAC analysis showed that the perceived security factor was the key factor. It the highest level of driving (stimuli) power and the lowest level of dependence power. The experts and specialists in this field considered this factor, among



other factors, as an important item to implement online social media marketing model. In addition, none of the identified factors was in the autonomous region, which means that there was a very logical relationship between the factors and indicated that none of the factors identified by the researchers were redundant. In addition, all factors identified by the researchers played a decisive role in the developed model. In addition, the value co-creation variable with the least driving power and the highest dependence power was identified as the target or outcome variable.

Statistical experts sometimes attack ISM because it is impossible to validate the developed model. Similarly, due to the deficiency of SEM and its dependency to a pre-designed model, this study considered them as complementary. The results of applying this quantitative technique indicated that the relationship between the factors that the researchers had expressed in the form of hypotheses was significant.

### **Inferential Results Gained from the Analysis of Data**

In the current study, the influence of perceived security on the two factors, including Perceived Ease Of Use (PEOU) and price, was directly assessed (H1 and H2), and the effect of perceived security on perceived ease of use was confirmed, which was in line with the results obtained from the study (Marianus & Ali, 2021; Cheng et al, 2006). Nevertheless, the effect of perceived security on the price factor could not be approved, taking into account the values of path coefficient, t-statistic, and significance level. Thus, the researchers rejected this relation (H2).

Besides, the impact of (PEOU) on Electronic Word Of Mouth (E-WOM), trust, satisfaction, and brand awareness was analyzed and confirmed in this study (H3, H4, H5, and H6). The achieved findings corresponded to the results of the research (Wilson et al, 2021; Eneizan et al, 2020; Li, 2016; Doma et al, 2015; Roca et al, 2009). However, one can argue that the results of the investigation, which was performed by Li in 2016 and measured the effects of the perceived ease of use on satisfaction, were not in agreement with the findings of the present study, and this correlation was not confirmed by Lee.

In this study, the scholars regarded the price as a separate factor and, after the confirmation of experts, analyzed its impact on the factors, including E-

WOM, trust, satisfaction, and brand awareness. While the price is primarily observed in the studies of numerous researchers with various names, just as in the investigation carried out by (Thaw et al, 2009), in which "economic motivations" were pointed out. In another research done by (Amoroso & Watanabe, 2011; Li & Hitt, 2011), the price was intended as "one of the subsets of perceived value". However, in their study conducted at Toyota Motor Corporation, Isa & Riyadi, 2018 analyzed the influence of the price independently. In another research carried out by Azzari & Pelissari in 2018, the impact of price on brand awareness was insisted on. Study (Oh, 2000) also corroborated the indirect effect of price on brand awareness as well. These results agree with confirming hypothesis 9 and 10, which were explored in this research. Moreover, the confirmation of hypothesis 7 and 9 indicating the effect of price on E-WOM and satisfaction are identical with the (Li & Hitt, 2010) findings. In addition to quality, they demonstrated that price is an essential factor influencing the consumers' satisfaction and E-WOM. Concerning the results of the hypothesis table and the calculated values of the path coefficient, t statistic, and significance level, all hypothesis associated with the price (H7, H8, H9 and H10) were confirmed.

Subsequently, the impact of E-WOM on consumer engagement was analyzed (H11) with respect to the interpretive structural modeling (ISM), and this effect was discussed and corroborated in the studies Bismoaziiz et al, 2021. Moreover, the results of the present study are in alignment with Erkan's research findings, which were performed in England in 2015, as well as study Bansal & Bansal, 2018.

In the interpretive structural modeling (ISM) offered in this investigation, the direct correlation of trust on consumer engagement (H12) was illustrated as the effect of third-level factors on the second-level factor. The studies concerning the influence of trust on consumer engagement are confirmed in the research of scholars like (Agyei et al, 2020; Than & Binh, 2020; Kosiba et al, 2020; Thakur, 2018), which are consistent with the results gained from this paper.

It is worth mentioning that a noticeable part of the articles that were studied addressed evaluating the impact of consumer engagement on the satisfaction (Zaid & Patwayati, 2021; Garzaro et al, 2021; Thakur, 2019). Nevertheless, the researchers concentrated on

investigating the effect of satisfaction on consumer engagement regarding the qualitative model achieved from experts' opinions (It shows the inverse of this relationship). The results of this study confirmed the link between satisfaction and consumer engagement (H13), and these results are in line with the findings obtained from research (Cambra Fierro et al, 2021; Al Dmour et al, 2019; Thakur, 2018).

Furthermore, a majority of researchers have corroborated the critical role of brand awareness in studies associated with the domain of online social media (Park et al, 2020; Steinþórsson & Alfreðsdóttir, 2018; Seo & Park, 2018). Of course, brand awareness alongside the brand image was explored as one of the dimensions of brand equity in the study carried out by Godey et al in 2016. Similar to the assessment of satisfaction, most of the previous researchers strived to analyze the influence of consumer engagement on brand awareness in this section. However, endeavors were made to investigate the effect of brand awareness on consumer engagement in the research ahead considering the interpretive structural model (H14). Taking into account the values gained from the path coefficient and the t statistic, the impact of the variable brand awareness on consumer engagement was confirmed. The findings of the current study comply with the results of research Gallart-Camahort, 2021; Vanitha & Subramanian, 2020; Isoraite, 2016 and Sarangan & Ragel, 2014.

Value co-creation without consumer engagement is not feasible (Waśkowski & Jasiulewicz, 2021). The results of this investigation also confirm the impact of consumer engagement on value co-creation, which is in harmony with the findings of study Waśkowski & Jasiulewicz, 2021; Behnam et al, 2021; Karunakaran & Raveendran, 2018; Kao et al, 2016.

To conduct this research, researchers have also faced some limitations, which are addressed as follows. Furthermore, suggestions will be provided to the researchers who are interested in the subject of the article:

1) Although the identified indicators were extracted from the research literature, the experts considered some indicators unrelated to the subject. They identified these indicators as same conceptually. Therefore, the researchers replaced them. This led to the removal of a large number of indicators in the initial stage and, then, in the Delphi technique rounds. Therefore, it is helpful to consider the meaning of words in different languages instead of literal translation.

2) The focus of this research is only on online social media. Future researchers may consider various aspects of offline media such as television and radio in their research, in the future.

3) In the study, the researchers do not focus on classifying goods as luxury goods, sports or special industrial goods such as cosmetics or home appliances, as a result, indicators of advertising or brand, have not been analyzed. Future researchers can develop a new marketing model in a specific industry with indicators of its related brand.

4) This study does not examine services or goods markets separately. Future researchers who are interested to study this area can investigate the aspects of consumer behavior in the field of goods and services separately and compare the results.

5) Future researchers can use various techniques such as system dynamics that do not limit the variables of a particular field and fuzzy cognitive mapping conducted based on the opinion of technical experts. They can identify factors and their causal relationships, develop a model and test it.

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