Association for Information Systems
AIS Electronic Library (AISeL)

The Effectiveness of Scarcity Messages in Group-Buying Social Commerce: The Comparison of Korea and China

Sujeong Choi
Chonnam National University, mischoisj@jnu.ac.kr

Min Qu
Chonnam National University, minhuayiting@naver.com

Follow this and additional works at: http://aisel.aisnet.org/pacis2017

The Effectiveness of Scarcity Messages in Group-Buying Social Commerce: The Comparison of Korea and China

Completed Research Paper

Sujeong Choi
Chonnam National University
77 Yongbong-Ro, Kwangju, S. Korea
mischoisj@jnu.ac.kr

Min Qu
Chonnam National University
77 Yongbong-Ro, Kwangju, S. Korea
minhuayiting@naver.com

Abstract

This study attempts to extend the customer value–customer satisfaction–customer loyalty framework by introducing key constructs of scarcity messages as a major environmental stimulus and the urge to buy impulsively as its response in the context of group-buying social commerce, across countries including Korea and China. More specifically, this study proposes that scarcity messages influence customers' value perception (i.e., utilitarian value and hedonic value. Moreover, the study suggests that scarcity messages and customer values arouse the urge to buy impulsively. In the Korean sample, the results show that scarcity messages increase both utilitarian and hedonic values as well as the urge to buy impulsively, which in turn enhances customers' satisfaction and further loyalty. In the Chinese sample, relationships related to utilitarian value are insignificant. That is, scarcity messages only influence hedonic value which increases the urge to buy impulsively. Besides, customer satisfaction depends on utilitarian and hedonic values.

Keywords: Group-buying Social Commerce; Scarcity Messages; Urge to Buy Impulsively; Utilitarian Value; Hedonic Value

Introduction

Social (s-)commerce along with the spread of social networking sites (SNSs) such as Facebook and KakoStory (i.e., the most popular smartphone-based SNS in Korea) emerges as a new type of electronic commerce (Liang et al., 2011-12). The prominent characteristic of s-commerce is to utilize customers' social networks for commerce activities which include social interactions and voluntary participation such as word-of-mouth and the sharing of product or discount information via SNS (Liang et al., 2011-12). The most popular type of s-commerce is a group-buying s-commerce in Korea and China (Song et al., 2015; Wen, 2013). Despite the rapid growth of s s-commerce, there is limited understanding on customers' purchasing behaviors in the context of group-buying s-commerce.

The group-buying s-commerce industry in Korea is currently dominated by three s-commerce sites such as Coupang, We-Make-Price, and Ticket-Monster in market-share order since it started in 2010. Accordingly, it is generally known that group-buying s-commerce represents s-commerce. In China, Meituan has become the largest s-commerce site which runs the group-buying program since it was founded in 2010 (Wen, 2013). Meituan started off as a Groupon clone. Meituan connects local companies with online consumers by offering the best group-buying deals daily. Local merchants through Meituan offer their products/service at a discounted price up to 80% off. Likewise, Meituan serves as a platform for group-buying s-commerce focusing on localized service such as local restaurants, hotels, spa and massage service, and so on.

Drawing on the customer value – customer satisfaction – customer loyalty framework which is proposed by Lam et al. (2004), this study examines how customers' value influences their satisfaction and further loyalty. Furthermore, the study attempts to expand the framework by integrating scarcity messages and the urge to buy impulsively that characterize group-buying s-commerce. More

specifically, first, scarcity messages highlighting a significant discount for a limited time only or for a limited quantity only are widely used as a typical promotion strategy to attract customers in group-buying s-commerce. Therefore, there is a need to comprehend the various effects of scarcity messages. Although scarcity messages have long been considered a major factor affecting customers' purchase intentions and actual behaviors (Brock, 1968; Lynn, 1991), most studies focus on verifying the effect of scarcity messages through experimental manipulations. By contrast, this study reveals the effectiveness of scarcity messages, on the basis of the well-developed framework regarding customers' value, satisfaction, and loyalty, in the context of group-buying s-commerce.

Another purpose of this study is to verify whether scarcity messages as an environmental stimulus arouse the urge to buy impulsively in group-buying s-commerce. Online impulse buying has been a key issue in electronic commerce (e-commerce) in that customers are easily exposed to many environmental stimuli which include pop-up ads, price-comparison search engines, images, and video clips (Childers et al., 2001; Madhavaram and Laverie, 2004; Parboteeah et al., 2009). In the same vein, the frequent exposure to scarcity messages in group-buying s-commerce sites is likely to increase the urge to buy impulsively. However, the relationship of scarcity messages and the urge to buy impulsively is not fully explained. Therefore, this study examines that scarcity messages trigger the urge to buy impulsively.

Finally, this study examines whether there are differences in the proposed hypotheses across countries including Korea and China. These two countries are geographically close. Further, China is a major market for Korean products/services. It is common that Korean products are selling in Chinese s-commerce sites, and vice versa. Considering that e-commerce is expanding over nation borders, it is necessary to grasp differences in customers' value, satisfaction, and loyalty and to understand how customers respond to environmental stimulus such as scarcity messages across countries.

Theory and Hypotheses

The Customer Value – Satisfaction – Loyalty Framework

Based on the cognition-affect approach (Lazarus, 1991), Lam et al. (2004) proposed the customer value (cognition) – satisfaction (affect) – loyalty (behaviour) framework in the context of business-to-business electronic commerce. That is, customer value leads to customer satisfaction and thus enhances customer loyalty. Customer loyalty is considered as a behavioral variable that describes a buyer's willingness of maintaining the relationships with a service provider in future by purchasing products/service repeatedly and by recommending the provider to others (Dwyer et al., 1987). Likewise, word of mouth and repurchase intentions are considered as two major behaviours to measure customer loyalty. Customer satisfaction refers to an affective and evaluative response (Oliver, 1993). Customer value as a cognition-based construct is an experience resulting from the overall evaluation of benefits obtained and sacrifices spent from purchasing products/service (Holbrook, 1999). Therefore, it is argued that customer value is an antecedent of customer satisfaction.

Customer value has been further divided into two forms: utilitarian value and hedonic value (Chitturi et al., 2008). The former refers to "the functional, instrumental, and practical benefits of consumption offerings" whereas the latter refers to "the aesthetic, experiential, and enjoyment-related benefits (Chitturi et al., 2008, p. 49). Chitturi et al. (2008) assert that utilitarian and hedonic benefits evoke different types of emotions (i.e., promotion and prevention emotions) which are related to dissatisfaction and satisfaction and thereby influencing customer loyalty. Similarly, IS researchers emphasize that users seek to two types of values in the consumption of new information technologies. That is, utilitarian value is typically explained as the construct of usefulness proposed in TAM (Davis, 1989) whereas hedonic value is explained as that of enjoyment proposed in the context of hedonic IS consumption (van der Heijden, 2004). Therefore, in this study, we consider utilitarian value and hedonic value as shopping values that customers want to fulfill in group-buying s-commerce. Based on the above discussion, this study draws the following hypotheses.

> H1a. Utilitarian value is positively associated with customer satisfaction.
> H1b. Hedonic value is positively associated with customer satisfaction.
> H1c. Customer satisfaction is positively associated with customer loyalty.

Integrating Scarcity Messages into the Customer Value–Satisfaction–Loyalty Framework

The concept of scarcity is proposed by the commodity theory that explains "any commodity will be valued to the extent that it is unavailable (Brock, 1968, p. 246)." As the unavailability of a product increases, people tend to perceive higher value of it (Lynn, 1991). The effect of scarcity on the perception of value has been verified through many empirical studies (Aggarwal et al., 2011; Eisend, 2008). Nowadays, retailers attempt to enhance the perceived value of products by manipulating their availability, such as producing their limited editions, distributing them through limited outlets only, and restricting purchase order sizes.

In the context of group-buying s-commerce, scarcity messages are commonly used as a typical promotion strategy to activate customers' purchasing intentions and actual purchase. S-commerce sites use scarcity messages emphasizing that a certain product/service is offered at a significant discount for a limited time only and/or as a limited quantity only. Customers are exposed to various scarcity messages such as "limited time only," "limited one per customer," "only while supplies last," or "limited release (Eisend, 2008)." The reason of using scarcity messages is that customers give more favorable evaluation on a product with limited availability (i.e., scarcity) (Eisend, 2008). Furthermore, because customers are able to buy a product for a limited time only, they feel tension of having to hasten the purchase. It is verified that scarcity messages increase the purchase intentions of a product, reduce the searching time for the purchase, and lead to positive post-evaluation of the purchase (Agarwal et al., 2011).

Drawing on the well-developed theoretical framework, this study explains how scarcity messages are associated with key theoretical concepts pertinent to customers' purchase such as value perception, customer satisfaction, and customer loyalty, particularly in the context of group-buying s-commerce where scarcity messages are commonly used. The positive effect of scarcity messages on customers' perception of shopping value has long been argued in various circumstances (Eisend, 2008; Lynn, 1991). That is, scarcity enhances customers' perceived value of products and shopping opportunities (Lynn, 1991). Through an experiment study, Eisend (2008) verified that scarcity messages are an effective advertisement to increase perceived value and thus leads to increased purchase intention. Scarcity effect is theoretically rooted in commodity theory that explains "any commodity will be valued to the extent that it is unavailable" (Brock, 1968, p. 246). By limiting the availability of a commodity, sellers increase the perceived value of the commodity (Eisend, 2008).

It is asserted that scarcity messages are closely related to economic consumption (Eisend, 2008). Generally, people expect to buy products/service at much cheaper prices through s-commerce than any other electronic commerce. Thus, scarcity messages enhance the perception that people can do shopping at a discounted price via s-commerce, which is related to utilitarian value. Moreover, scarcity messages could arouse fun and pleasure in the process of shopping, namely hedonic value. In the s-commerce shopping, scarcity is a source of enjoyment (Song et al., 2015). Therefore, this study postulates that scarcity messages positively influence customers' shopping value.

> H2a. Scarcity messages are positively associated with utilitarian value.
> H2b. Scarcity messages are positively associated with hedonic value.

Scarcity Messages and the Urge to Buy Impulsively

Impulse buying is defined as an unplanned purchase which is triggered by an exposure to external stimuli (Madhavaram and Laverie, 2004; Parboteeah et al., 2009; Rook, 1987). Stimuli can include sales promotional devices deployed in a store (Applebau, 1951), actual products and product characteristics (i.e., hedonic components), advertisements (Rook, 1987), and shopping environments (Childers et al., 2001). Online impulse purchase frequently occurs in e-commerce because customers are easily exposed to environmental stimuli such as pop-up ads, price-comparison search engines, images, video clips, and so on, which causes impulse buying (Childers et al., 2001; Madhavaram and Laverie, 2004; Parboteeah et al., 2009). Childers et al. (2001) suggest that customers are more exposed to environmental manipulations in online shopping environments.

The urge to buy impulsively often occurs when customers are exposed to an unexpected stimulus (Beatty and Ferrell, 1998; Rook, 1987). This is conceptualized as "the state of desire that is experienced upon encountering an object in the environment (Beatty and Ferrell, 1998, p. 172)". In online shopping, people are more likely to experience the urge to buy impulsively, by being exposed to external stimuli frequently (Moe and Fader, 2004). Based on the above discussion, this study

proposes that scarcity messages as an environmental stimulus triggers the urge to buy impulsively in group-buying s-commerce. That is, when customers are frequently exposed to scarcity messages in s-commerce sites, they are more likely to experience an unexpected, spontaneous desire to purchase products/service. Through scarcity messages, as customers perceive that products/service are available at a big discounted price for a limited time only, they are likely to buy them immediately.

H2c. Scarcity messages are positively associated with the urge to buy impulsively.

Customer Value and Urge to Buy Impulsively

Furthermore, this study posits that the favorable evaluation of utilitarian and hedonic benefits that customers could obtain from group-buying s-commerce increases the urge to buy impulsively. It is generally argued that impulse buying is associated with hedonic motivations such as fun, novelty, and surprise (Hausman, 2000). Previous studies agree that hedonic value representing enjoyment occurred during the shopping process arouses the urge to buy impulsively (Song et al., 2015; Parboteeah et al., 2009). Hedonic components of purchasing have been emphasized as a trigger of impulse purchasing (Childers et al., 2001; Madhavaram and Laverie, 2004; Wu et al., 2016).

On the other hand, concerning the effect of utilitarian value on the urge to buy impulsively, there is no consensus. Parboteeah et al. (2009) and Xiang et al. (2016) did not consider the direct relationship between usefulness and the urge to buy impulsively, arguing that enjoyment determines the urge to buy impulsively. Song et al. (2015) asserted that discounted price, which represents an aspect of utilitarian value, is negatively related to the urge to buy impulsively and found that its effect on utilitarian value is insignificant. Wu et al. (2016) contended that usefulness increases online impulse buying, based on the assertion that an individual's cognitive reaction (i.e., usefulness) to environmental stimuli affects his or her responses such as impulsive buying. Following this idea, this study assumes that utilitarian value could be a trigger of the urge to buy impulsively, considering that online customers seek to achieve the economic goal of shopping through group-buying s-commerce.

H3a. Utilitarian value is positively associated with the urge to buy impulsively.
H3b. Hedonic value is positively associated with the urge to buy impulsively.

Urge to Buy Impulsively and Customer Satisfaction

It is known that the urge to buy impulsively leads to an actual impulsive purchase (Rook, 1987). Although all impulsive urges are enacted, the possibility of an impulsive purchase increases (Beatty and Ferrell, 1998). Furthermore, it is generally argued that an impulsive purchase causes negative outcomes, such as regrets due to the purchase of products/service outside customers' specific shopping goal (Hoch and Loewentein, 1991). On the contrary, Gardner and Rook (1988) found that an impulse purchase brings about customers' positive moods due to satisfaction of products/service, the relief of impulsive urges. The urge to buy impulsively is an unexpected emotional response to the external information (Parboteeah et al., 2009). While browsing s-commerce sites, customers are easily exposed on various information highlighting scarcity. Further, such information arouses customers' impulsive urge to buy products/service. As discussed the above section, this study proposes that in addition to scarcity message, the urge to buy impulsively is determined by utilitarian and hedonic values based on the cognitive evaluation of outcomes that customers can obtain from group-buying s-commerce. That is, customers' impulsive urge to buy is determined by scarcity message as an external stimulus and further the rational evaluation of shopping. Thus, this study assumes that the urge to buy impulsively leads to favorable evaluation on group-buying s-commerce.

H4. The urge to buy impulsively is positively associated with customer satisfaction.

Differences in Group-buying S-Commerce across Countries

It is verified that the impact of scarcity messages varies across culture (Jung and Kellaris, 2004). Through a shopping simulation experiment, they found that the effect of scarcity message on purchase intentions is significant only in a low-context culture, not in a high-context culture. Besides, the consequences of impulse buying would be different depending on culture (Gardner and Rook, 1988). They stated that customers' mood after impulse buying differs across cultural factors, such as spontaneity and self-indulgence culture. That is, if culture represents spontaneity and self-indulgence, people are more likely to feel positive moods after impulse buying than those under the culture where such purchases are sinful. Lee and Kacen (2008) also asserted that customer satisfaction with impulse and planned purchasing decision varies across countries with different culture, such as individualism

and collectivism. The difference in cultures determines ones' norms, values, attitudes, and behaviors (Triandis, 1994).

Previous research has classified Korea and China as a collectivist culture (Lee and Kacen, 2008). Customers from collectivist countries tend to satisfy with impulse purchasing than those from individualist countries (Lee and Kacen, 2008). Although Korea and China belong to the collectivism, there would be differences in customers' responses to scarcity messages, shopping values, the urge to impulsively, customer satisfaction, and customer loyalty, due to different social norms and values of s-commerce embedded in the country. Therefore, this study proposes the following hypothesis.

H5: The above hypothesized relationships vary across Korea and China.

Conceptual Model

The proposed model integrates scarcity messages and the urge to buy impulsively into the customer value–satisfaction–loyalty framework (Lam et al., 2004), in the context of group-buying s-commerce where scarcity messages are commonly used as a promotion strategy. Further, the frequent exposure to scarcity messages is linked with the issue of impulse buying. Based on the assertion that scarcity influences customers' value perception (Lynn, 1991), this study proposes that scarcity messages act on customers' value, which in turn influences customer satisfaction and ultimately customer loyalty.

Moreover, based on studies applying the stimuli-organism-response model (Parboteeah et al., 2009; Wu et al., 2016; Xiang et al., 2016), our model proposes that scarcity messages as a key environmental stimulus in group-buying s-commerce trigger customers' cognitive reaction (i.e., utilitarian value) and affective reaction (i.e., hedonic value), which in turn lead to the urge to buy impulsively as a response. The model explains how external stimuli lead to one's cognitive and affective reactions and then determine his or her behaviors (Mehrabian and Russell, 1974). Furthermore, this study proposes that customers' urge to buy impulsively is a function of their cognitive reaction (i.e., utilitarian value) and affective reaction (i.e., hedonic value) in terms of environmental stimuli as well as scarcity measures. Further, customers' urge to buy impulsively influences their satisfaction and then loyalty. Figure 1 shows the hypothesized relationships in this study.
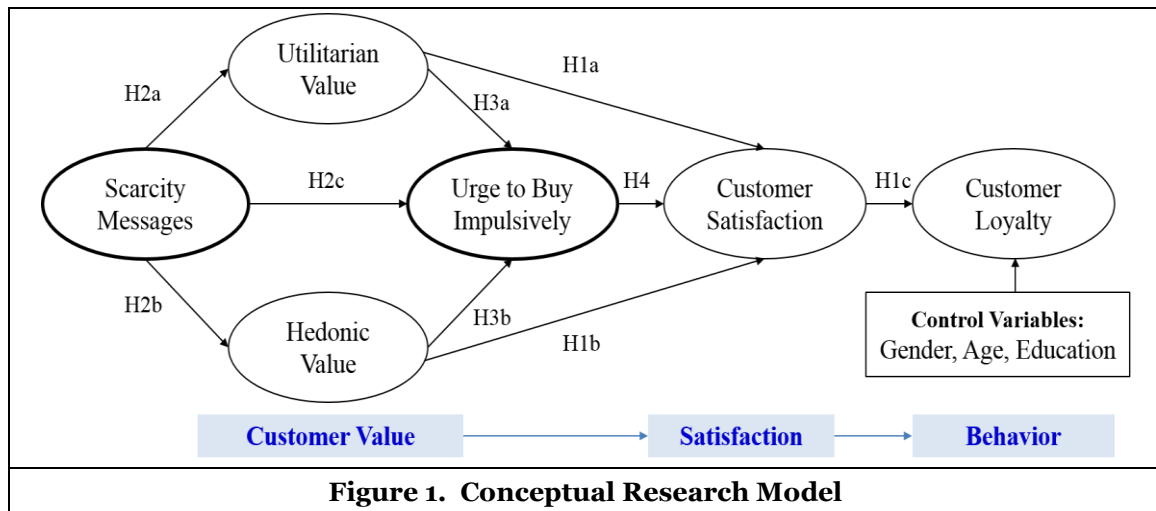
Figure 1. Conceptual Research Model

Methods

Data Collection and Sample

To empirically test the proposed research model and hypotheses, we conducted a survey using a self-reported questionnaire method. In Korea, surveys were administered to graduate and undergraduate students at a local university with experience in the use of group-buying s-commerce (e.g., Coupang, We-Make-Price, and Ticket-Monster). During the class, we distributed a total of 400 questionnaires and received 318 responses. Excluding twenty-seven responses with unfinished and missing data, we used a total of 291 responses for the analysis.

To collect sample in China, this study conducted an online-based survey which is translated from Korean to Chinese. We requested a retailer who is selling products/services on the group-buying s-commerce site namely, Meituan.com to promote their customers to participate in our online-survey. The retailer is a Chinese graduate student in the university that we collected sample in Korea. This study selected customers with experience in Meituan because it is the dominant leader in group-buying s-commerce, offering the best local deals to customers and also insuring high-rate profits to local retailers (Wen, 2013). A total of 330 responses were received through the survey and excepting fifty-seven responses, we used 273 responses for the analysis. There were many responses dropped out during the online survey. The detailed information of the each sample collected from Korea and China is presented in Table 1.

Table 1. Demographics			
Category		Frequency (%)	
		Korea (n=291)	China (n=273)
Gender	Male	128(44.0)	121(44.3)
	Female	163(56.0)	152(55.7)
Age	Twenties	197(67.7)	251(91.9)
	Thirties	58(19.9)	18(6.6)
	Forties	31(10.7)	3(1.1)
	> Fifties	5(1.7)	1(0.4)
Education	High school	22(7.6)	26(9.5)
	University student (current)	111(38.1)	138(50.5)
	University	127(43.6)	95(34.8)
	Graduate school	31(10.7)	14(5.1)
Frequency of s-commerce use (monthly)	1-2	289(65.4)	182(66.7)
	3-4	55(19.0)	27(9.9)
	5-6	18(6.2)	30(11.0)
	7-8	5(2.8)	31(11.4)
	9 and over	19(6.6)	3(1.1)
Purchasing items	Food/Restaurants	53(18.3)	159(58.2)
	Cultural performances/ Events/Leisure	15(5.2)	35(12.8)
	Fashion (E.g., clothing, shoes)	120(41.5)	5(1.8)
	Beauty/Cosmetics/Accessories	29(10.0)	29(10.6)
	Tour/Hotel	15(5.2)	12(4.4)
	Books	10(3.5)	-
	Electronics	6(2.1)	-
	Household items	33(11.4)	-
	Health-related	-	33(12.1)
	Others	8(2.8)	-

Measures

This study uses instruments developed in previous research, and then modified them slightly to reflect the context of group-buying s-commerce. All items were measured on a five-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The details of measures are presented in Appendix A. In this study, *scarcity messages* are defined as the degree of a customer's perception on the promotional messages highlighting limited-quantity and limited-time of products/services in s-commerce, based on the study of Aggarwal et al. (2011). *The urge to buy impulsively* is defined as a customer's current state of impulsiveness while browsing s-commerce sites, based on Parboteeah et al. (2009). *Utilitarian value* is defined as the extent to which a customer obtains extrinsic benefits from s-commerce shopping whereas *hedonic value* is defined as the extent to which a customer obtains intrinsic benefits from the shopping, based on the studies of Chitturi et al. (2008) and Choi (2016). *Customer satisfaction* is conceptualized as customers' overall evaluation on group-buying s-commerce, based on Lam et al. (2004). *Customer loyalty* is defined as a concept consisting of word of mouth and repurchase intentions, based on Lam et al. (2004).

Results

Measurement Model Assessment and Common Method Bias (CMB)

As shown in Table 2, Cronbach's α for all constructs was 0.8 or higher, representing a satisfactory reliability for all constructs (Nunnally, 1978). Moreover, the composite reliability of all constructs

quite exceeded the 0.70 threshold for acceptable reliability, and the AVE (average variance extracted) value exceeded the recommended threshold of 0.5. We evaluated construct validity via the confirmatory factor analysis (CFA) by including all constructs and using Amos 20. As a result of the CFA, we obtained fit indices for the measurement model and assessed them according to the recommended threshold by Jöreskog and Sörbom (1993). In each sample collected in Korea and China, all indices met the recommended threshold, supporting that the model had a good fit to the data collected (See. Table 2). Finally, we confirmed the discriminant validity of all constructs by comparing the square root of the AVE ($\sqrt{AVE}$) of all constructs with all the correlations. As indicated in Table 3, this study verified that our constructs have satisfactory discriminant validity in each sample collected from Korea and China.

The possibility of CMB was verified because this study measured independent and dependent variables from the same source, using the Harman's single factor test (Podsakoff et al., 2003). Also, this study checked whether one single factor emerges from the exploratory factor analysis and it accounts for a majority of the variance. In both samples, it is verified that CMB is not a serious issue in this study.

Table 2. Results of the confirmatory factor analysis								
Constructs	**Items**	**Standardized factor loadings (t-value)**				**AVE**	**Construct reliability**	**Cronbach's α**
		Korea		**China**		**Korea/China**		
Scarcity Messages	sm1	0.962	-	0.774	-	0.815/0.572	0.898/0.727	0.882/0.681
	sm2	0.822	10.43	0.672	6.21			
Urge to Buy Impulsively	ubi1	0.821	-	0.784	-	0.743/0.610	0.920/0.862	0.930/0.863
	ubi2	0.848	17.50	0.747	12.37			
	ubi3	0.917	19.75	0.824	13.68			
	ubi4	0.924	19.98	0.776	12.89			
Utilitarian Value	uv1	0.873	-	0.800	-	0.729/0.688	0.914/0.898	0.887/0.884
	uv2	0.904	20.08	0.803	14.14			
	uv3	0.757	15.39	0.847	15.02			
	uv4	0.728	14.50	0.791	13.89			
Hedonic Value	hv1	0.843	-	0.768	-	0.722/0.567	0.886/0.796	0.898/0.767
	hv2	0.836	17.11	0.663	9.97			
	hv3	0.913	18.72	0.740	11.00			
Customer Satisfaction	cs1	0.827	-	0.746	-	0.799/0.667	0.923/0.857	0.882/0.794
	cs2	0.844	16.30	0.686	10.20			
	cs3	0.863	16.68	0.815	11.43			
Customer Loyalty	cl1	0.877	-	0.824	-	0.773/0.681	0.911/0.865	0.905/0.838
	cl2	0.901	20.35	0.799	13.11			
	cl3	0.840	18.40	0.764	12.63			

Note: *** p < 0.001. Fit index (Korea): chi-square = 188.80, degrees of freedom (df) = 137, p-value = 0.002, the goodness-of-fit index (GFI) = 0.936, the standardized root mean square residual (SRMR) = 0.033, the root mean square error of approximation (RMSEA) = 0.036, chi-square/df = 1.378, the adjusted GFI (AGFI) = 0.912, the normed fit index (NFI) = 0.954, the non-normed fit index (also called the Tucker-Lewis index) (NNFI/TLI) = 0.984 and comparative fit index (CFI) = 0.987.

Fit index (China): Chi-square = 178.49 (p-value = 0.010), df = 137, Chi-square/df = 1.303, GFI = 0.937 SRMR= 0.037, RMSEA= 0.033, AGFI = 0.913, NFI = 0.927, NNFI (or TLI) = 0.977 and CFI = 0.982.

Table 3. Means, Standard Deviations, and Construct Correlation										
		Constructs	**Mean**	**S.D.**	**A**	**B**	**C**	**D**	**E**	**F**
Korea	A	Scarcity Messages	3.41	0.93	**0.903**					
	B	Urge to Buy Impulsively	3.21	0.98	0.365***	**0.862**				
	C	Utilitarian Value	3.76	0.76	0.298***	0.396***	**0.854**			
	D	Hedonic Value	2.80	0.98	0.251***	0.486***	0.312***	**0.850**		

	E	User Satisfaction	3.45	0.71	0.390***	0.393***	0.513***	0.174**	**0.894**
	F	Customer Loyalty	3.45	0.89	0.351***	0.402***	0.442***	0.283***	0.644***	**0.879**
China	A	Scarcity Messages	3.34	0.79	**0.756**					
	B	Urge to Buy Impulsively	3.31	0.85	0.354***	**0.781**				
	C	Utilitarian Value	3.30	0.80	0.018	0.220**	**0.830**			
	D	Hedonic Value	3.40	0.76	0.496***	0.532***	0.491***	**0.753**		
	E	User Satisfaction	3.34	0.68	0.319***	0.384***	0.388***	0.628***	**0.817**	
	F	Customer Loyalty	3.54	0.78	0.319***	0.341***	0.333***	0.501***	0.568***	**0.825**

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Figures along the diagonal denote the square root of the AVE.

Testing of Research Model and Hypotheses

The structural equation modeling method was employed to test the proposed model and hypotheses, using AMOS 20. In each sample collected in Korea and China, the model provided an appropriate fit of the data, as shown in Figure 2 and Figure 3. Table 4 summarizes the results of the hypothesis testing. In the sample from Korea, except H1b (the relationship of hedonic value and customer satisfaction), the other hypotheses were significant at the 0.001 level, thus providing support for those hypotheses. In the sample from China, four hypotheses (i.e., H2a, H3a, H3b, and H4) were rejected at the 0.05 level. The rest of hypotheses were significant at the 0.001 level, except H4a ($p < 0.01$).
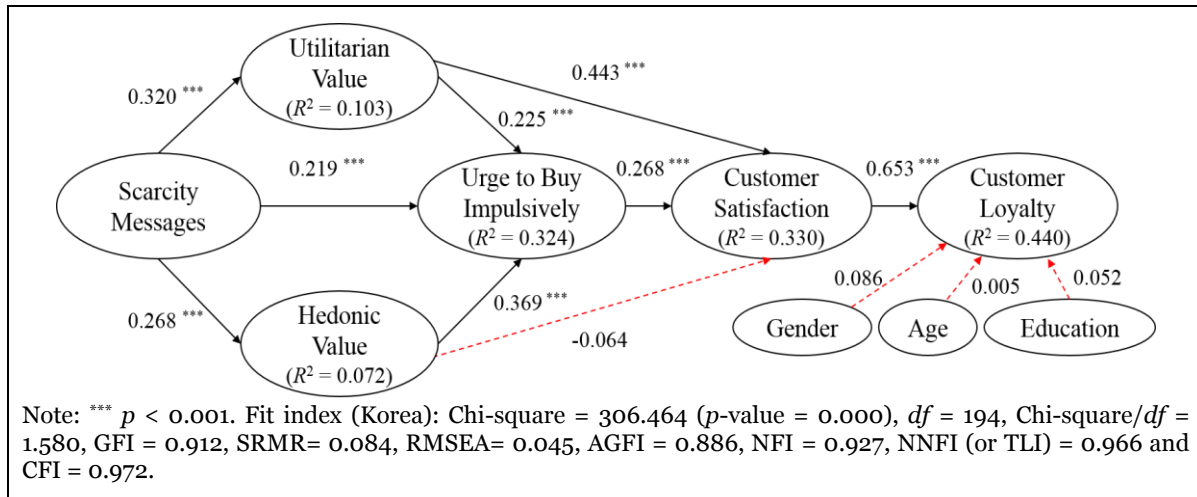

Note: *** $p < 0.001$. Fit index (Korea): Chi-square = 306.464 (p-value = 0.000), df = 194, Chi-square/df = 1.580, GFI = 0.912, SRMR= 0.084, RMSEA= 0.045, AGFI = 0.886, NFI = 0.927, NNFI (or TLI) = 0.966 and CFI = 0.972.

Figure 2. Results for Research Model (Korea)

Note: ** $p < 0.01$, *** $p < 0.001$. Fit index (China): Chi-square = 302.065 (p-value = 0.000), df = 194, Chi-square/df = 1.557, GFI = 0.910, SRMR= 0.083, RMSEA= 0.045, AGFI = 0.882, NFI = 0.881, NNFI (or TLI) = 0.944 and CFI = 0.953.
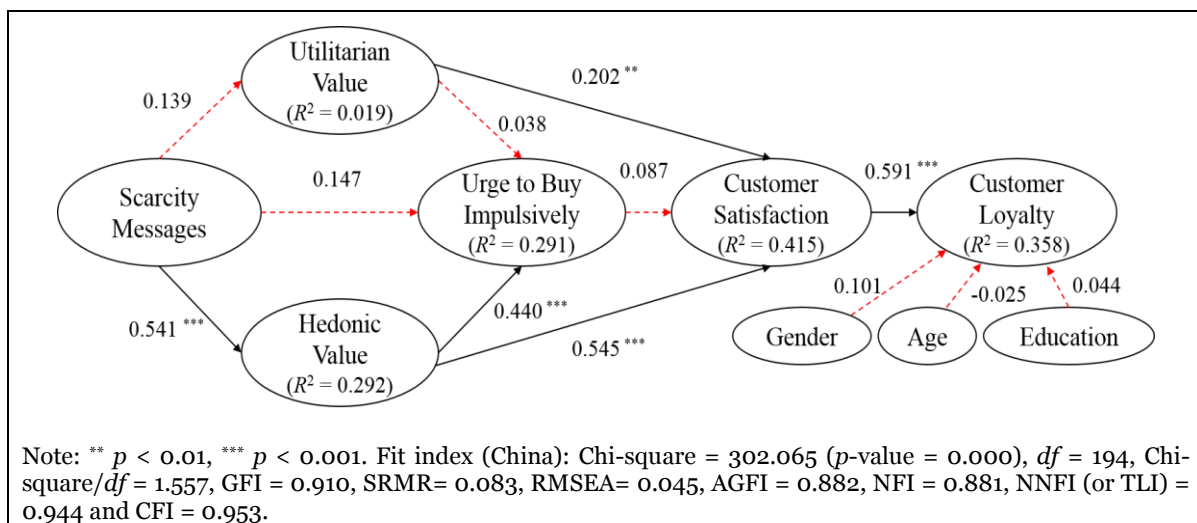
Figure 3. Results for Research Model (China)

	Table 4. Summary of Hypotheses Testing				
	Hypotheses	Standardized path coefficients (*t*-value)			
		Korea		China	
H1a	Utilitarian Value → Customer Satisfaction	0.443 (6.962) ***	supported	0.202 (3.185) **	supported
H1b	Hedonic Value → Customer Satisfaction	-0.064 (-1.000)	*ns*	0.545 (5.798) ***	supported
H1c	Customer Satisfaction → Customer Loyalty	0.653 (10.547) ***	supported	0.591 (7.585) ***	supported
H2a	Scarcity Messages → Utilitarian Value	0.320 (4.869) ***	supported	0.139 (1.782)	*ns*
H2b	Scarcity Messages → Hedonic Value	0.268 (4.079) ***	supported	0.541 (5.595) ***	supported
H3a	Scarcity Messages → Urge to Buy Impulsively	0.219 (3.494) ***	supported	0.147 (1.537)	*ns*
H3b	Utilitarian Value → Urge to Buy Impulsively	0.225 (3.843) ***	supported	0.038 (0.607)	*ns*
H3c	Hedonic Value → Urge to Buy Impulsively	0.369 (6.162) ***	supported	0.440 (4.655) ***	supported
H4	Urge to Buy Impulsively → Customer Satisfaction	0.268 (3.918) ***	supported	0.087 (1.100)	*ns*
	Gender → Customer Loyalty	0.086 (1.668)	*ns*	0.101 (1.723)	*ns*
	Age → Customer Loyalty	0.005 (0.105)	*ns*	-0.025 (-0.420)	*ns*
	Education → Customer Loyalty	0.052 (1.056)	*ns*	0.044 (0.755)	*ns*

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. *ns* = not-significant.

Multi-group Analysis

To verify differences in the impact of hypothesized relationships across countries, we conducted a multi-group analysis with two countries such as Korea and China. To examine whether the relationships between the independent and dependent variables would vary according to countries, we estimated an unconstrained (or free) model that imposed no restriction on these relationships. We then constructed an equality-constrained model that equally constrained the relationships between the independent and dependent variables to verify the chi-square difference between the two models. Here we assumed a significant difference which means that there is a difference between Korea and China. Table 5 shows the results for multi-group analysis with two countries. Our results found that there is a significant difference in three path coefficients across countries.

	Table 5. Results of Multi-Group Analysis				
	Hypothesis	Unstandardized path coefficients			
		Korea	China	Δ x^2	Results
H5	**Utilitarian Value → Customer Satisfaction**	**0.347*****	0.161***	5.952***	supported
	Hedonic Value → Customer Satisfaction	-0.026***	**0.477*****	30.154***	supported
	Customer Satisfaction → Customer Loyalty	0.887***	0.735***	1.415***	ns
	Scarcity Messages → Utilitarian Value	0.276***	0.165***	0.846***	ns
	Scarcity Messages → Hedonic Value	0.281***	**0.596*****	6.807***	supported
	Scarcity Messages → Urge to Buy Impulsively	0.196***	0.191***	0.002***	ns
	Utilitarian Value → Urge to Buy Impulsively	0.199***	0.041***	1.655***	ns
	Hedonic Value → Urge to Buy Impulsively	0.396***	0.510***	0.774***	ns
	Urge to Buy Impulsively → Customer Satisfaction	0.188***	0.067***	2.373***	ns

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. *ns*: not significant.

Conclusions, Discussion and Implications

The current study attempted to extend the customer value – customer satisfaction – customer loyalty framework by introducing the constructs of scarcity messages as a major environmental stimulus and

the urge to buy impulsively as their response, in the context of group-buying social commerce. More specifically, this study proved that scarcity messages influence customers' value perception (i.e., utilitarian value and hedonic value), which in turn leads to customer satisfaction and further customer loyalty. The study also found that scarcity messages and two types of customer values arouse the urge to buy impulsively, and thereby influencing customer satisfaction and customer loyalty. Finally, the study showed that there are differences between Korean and Chinese customers regarding the impact of scarcity messages on customer value and the type of customer value determining customer satisfaction.

The details and implications of our results are described as below. In the sample collected in Korea, we obtained the following results. First, scarcity messages increase both utilitarian and hedonic values. Generally, group-buying social commerce sites attract customers by presenting scarcity messages highlighting that customers can buy a product at a very cheap price for a limited time only. It is asserted discounted prices create customers' intrinsic enjoyment and achievement of shopping (Song et al., 2015). Compliant with this argument, the current study shows that scarcity messages stressing discounted prices increase the affective reaction, namely hedonic value. By contrast, the influence of scarcity messages on utilitarian value has not fully explained in previous studies, despite the fact that online shoppers are sensitive to purchasing prices. That is, buying a desirable product at a very cheap price is one of the shopping goals of participating in group-buying social commerce. Thus, it is noteworthy that scarcity messages greatly stimulate the cognitive reaction, namely utilitarian value that customers are eager to obtain from social commerce.

Second, this study indicates that the urge to buy impulsively is triggered by not only scarcity messages, but also utilitarian and hedonic values. It implies that customers should make a rushed purchase decision because the purchasing is only possible for a certain time and for a certain quantity. In this sense, it can be said that scarcity messages as a promotion strategy used by group-buying social commerce sites are very effective in stimulating customers' urge to buy impulsively. Our results also show that both utilitarian and hedonic values provoke customers' urge to buy impulsively. Although previous research asserts that such impulsivity is only triggered by hedonic value, namely affective reactions such as enjoyment and pleasure (Parboteeah et al., 2009), the current study demonstrates that utilitarian value representing cognitive reactions can be a trigger of the impulsivity.

Finally, customer satisfaction is determined by utilitarian value and the urge to buy impulsively, and further it leads to greater customer loyalty. However, the effect of hedonic value on customer satisfaction is not significant. The findings imply that customers seek to fulfil their utilitarian value in group-buy social commerce. That is, utilitarian value is more effective than hedonic value in determining customer satisfaction. This result is noteworthy, given that hedonic characteristics are considered as important factors in designing online stores (Childers et al., 2001; Madhavaram and Laverie, 2004; Parboteeah et al., 2009). Thus, it is important to appeal utilitarian characteristics able to achieve customers' extrinsic motive in group-buying social commerce.

In the sample collected in China, we obtained quite different results from the sample of Korea. In the Korean sample, except the relationship of hedonic value and customer satisfaction, all other relationships are significant. However, in the Chinese sample, particularly, utilitarian value-related relationships are not significant. Specifically, first, scarcity messages only influence hedonic value while they do not have significant effects on utilitarian value and the urge to buy impulsively. Second, only hedonic value acts on the urge to buy impulsively. Third, customer satisfaction is determined by both utilitarian and hedonic values, but not by the urge to buy impulsively. Finally, it is verified that customer satisfaction greatly increases customer loyalty.

Overall, scarcity messages activate hedonic value, which in turn increases the urge to buy impulsively and customer satisfaction leading to customer loyalty. Besides, hedonic value is more influential than utilitarian value in determining customer satisfaction. The findings imply that customers who use group-buying social commerce in China put their emphasis on hedonic aspects of shopping. Therefore, Chinese group-buying social commerce sites should attempt to develop hedonic characteristics in designing their websites. That is, it is important to maximize customers' affective, intrinsic motives such as fun, enjoyment, and excitement. Managers could considerably increase customer satisfaction by fulfilling hedonic value. Furthermore, our results suggest that it is necessary to develop scarcity messages provoking hedonic value.

Based on the results of multi-group analysis with two samples collected in Korea and China, we found a significant difference in three path coefficients across countries. First, the effect of utilitarian value on customer satisfaction varies across countries. That is, Korean customers perceive greater customer satisfaction through utilitarian value than Chinese customers. Second, with regard to hedonic value,

Chinese customers seek to fulfill hedonic value than Korean customers, through group-buying social commerce. Finally, Chinese customers perceive more strongly the influence of scarcity messages on hedonic value than Korean customers. The results imply that the shopping value that customers aim to achieve through the use of group-buying social commerce differs from countries. This study has a contribution by verifying the differences across countries. The results imply that practitioners should understand the differences and develop appropriate promotion strategies for different customers in different countries.

Limitations and Future Research

Concerning this study's limitations, first, the majority of the respondents in our sample collected in Korea and China are twenties (approximately 68% of Korean sample and 92% of Chinese sample). This leads to further research that considers the difference between younger people and older people in using group-buying s-commerce. Younger people are more likely to pursue hedonic value from s-commerce, whereas older people are more likely to pursue utilitarian value from s-commerce. Second, the results of testing hypotheses vary depending on countries. For example, the relationship of hedonic value on the urge to buy impulsively was significant in Korean customers, but not significant in the Chinese customers. However, this study does not explain what factors cause this difference. Therefore, further research on this difference is needed.

Appendix A. Measurement Items

Scarcity messages (Aggarwal et al., 2011).
   sm1. Products/services offered by social commerce sites are available for a predefined period.
   sm2. Products/services offered by social commerce sites are available for a predefined quantity.
Urge to buy impulsively (Parboteeah et al., 2009; Song et al., 2015)
   ubi1. When I browse this social commerce site, I frequently feel the urge to buy products/service other than my specific shopping goal.
   ubi2. While browsing this site, I have a desire to buy products/services that do not pertain to my specific shopping goal.
   ubi3. While browsing this site, I have the inclination to purchase products/service outside my specific shopping goal.
   ubi4. While browsing this site, I feel the urge to buy products/service suddenly.
Utilitarian value (Chitturi et al., 2008; Choi, 2016)
   uv1. Through social commerce, I buy products/services quickly.
   uv2. Through social commerce, I buy products/services conveniently.
   uv3. Through social commerce, I buy products/services with less effort.
   uv4. Through social commerce, I do economic shopping.
Hedonic value (Chitturi et al., 2008; Choi, 2016)
   hv1. Through social commerce, I enjoy searching new products/services.
   hv2. Through social commerce, it seems that I could escape from everyday life.
   hv3. Irrespective of purchasing products/services actually, I am happy with searching in social commerce sites in itself.
Customer satisfaction (Lam et al., 2004)
   cs1.Overall, I am satisfied with products/service that I bought via social commerce.
   cs2. I am more satisfied with the experience of this social commerce site use than my expectation.
   cs3. I am satisfied with the process of purchasing products/services in this social commerce site.
Customer loyalty (Lam et al., 2004)
   cl1. I am willing to buy products/services through this social commerce site in future.
   cl2. I will try to recommend this social commerce site to other people.
   cl3. I will consider this social commerce site first when I buy products/services in future.

References

Aggarwal, P., Jun, S. Y., & Huh, J. H. (2011). Scarcity messages: A consumer competition perspective. *Journal of Advertising*, 40(3), 19-30.
Beatty, S. E., & Ferrell, M. E. (1998). Impulse buying: Modeling its precursors. *Journal of Retailing*, 74(2), 169-191.
Brock, T. C. (1968). *Implications of commodity theory for value change*, New York: Academic Press.

Busalim, A. H., & Hussin, A. R. C. (2016). Understanding social commerce: A systematic literature review and directions for further research. *International Journal of Information Management*, 36, 1075-1088.

Chitturi, R., Raghunathan, R., & Mahajan, V. (2008). Delight by design: The role of hedonic versus utilitarian benefits. *Journal of Marketing*, 72(3), 48-63.

Childers, T. L., Carr, C. L., Peck, J., & Carson, S. (2001). Hedonic and utilitarian motivations for online retail shopping behaviour. *Journal of Retailing*, 77, 511-535.

Choi, S. (2016). The influence of scarcity message on customers' perceived value, satisfaction, and repurchase intention in the context of group-buying social commerce. *Journal of Information Technology Applications & Management*, 23(1), 97-117.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.

Dwyer, F.R., Schurr, P.H., & Oh, S. (1987). Developing buyer-seller relationships. *Journal of Marketing*, 51, 11-27.

Eisend, M. (2008). Explaining the impact of scarcity appeals in advertising: The mediating role of perceptions of susceptibility. *Journal of Advertising*, 37(3), 33-40.

Gardner, M. P., & Rook, D. W. (1988). Effects of impulse purchases on consumers' affective states. *Advances in Consumer Research*, 15, 127-130.

Hoch, S. J., & Loewenstein, G. F. (1991). Time-inconsistent preferences and consumer self-control. *Journal of Consumer Research*, 17(March), 492-507.

Jung, J. M., & Kellaris, J. J. (2004). Cross-national differences in proneness to scarcity effects: The moderating roles of familiarity, uncertainty avoidance, and need for cognitive closure. *Psychology and Marketing*, 21(9), 739-753.

Lam, S.Y., Shankar, V., Erramilli, M.K., & Murthy, B. (2004). Customer value, satisfaction, loyalty, and switching costs: An illustration from a business-to-business service context. *Journal of the Academy of Marketing Science*, 32(3), 293-311.

Lazarus. R. S. (1991). *Emotion and adaptation*, New York, NY: Oxford University Press.

Lee, J., & Kacen, J. (2008). Cultural influences on consumer satisfaction with impulse and planned purchase decisions. *Journal of Business Research*, 61, 265-272.

Liang, T., & Turban, E. (2011-12). Introduction to the special issue social commerce: A research framework for social commerce. *International Journal of Electronic Commerce*, 16(2), 5-14.

Lynn, M. (1991). Scarcity effects on value: A quantitative review of the commodity theory literature. *Psychology and Marketing*, 8, 43-57.

Madhavaram, S. R., & Laverie, D. E. (2004). Exploring impulse purchasing on the Internet. *Advances in Consumer Research*, 31, 59-66.

Mehrabian, A., & Russell. J. A. (1974). *An approach to environmental psychology*, MIT, Cambridge, MA.

Nunnally, J. C., & Bernstein, I, H. (1994). *Psychometric theory*, 3rd ed., McGraw-Hill, Inc., New York.

Oliver, R.L. (1993). Cognitive, affective, and attribute bases of the satisfaction. *Journal of Consumer Research*, 20(3), 451-466.

Parboteeah, D.V., Valacich, J.S., & Wells, J.D. (2009). The influence of website characteristics on a consumer's urge to buy impulsively. *Information Systems Research*, 20(1), 60-78.

Rook, D. W. (1987). The buying impulse. *Journal of Consumer Research*, 14(2), 189-199.

Song, H.G., Chung, N., & Koo, C. (2015). Impulsive buying behaviour of restaurant products in social commerce: A role of serendipity and scarcity message. *The 19th Pacific Asia conference on information systems*, Singapore, July 6–9.

van der Heijden, H. (2004). User acceptance of hedonic information systems. *MIS Quarterly*, 28(4), 695-704.

Wen, T. (2013). *Meituan.com*, China Renaissance Securities (Hong Kong) Limited, 24 June 2013, pp. 1-16.

Wu, I., Chen, K., & Chiu, M. (2016). Defining key drivers of online impulse purchasing: A perspective of both impulse shoppers and system users. *International Journal of Information Management*, 36, 284-296.

Xiang, L., Zheng, X., Lee, M. K.O., & Zhao, D. (2016). Exploring consumers' impulse buying behaviour on social commerce platform: The role of parasocial interaction. *International Journal of Information Management*, 36, 333-347.