

# An Empirical Study on Consumers' Continuance Intention Model of Online Group-buying

Gang Li<sup>a,\*1</sup>, Xin Shi<sup>a,\*2</sup>

<sup>a</sup> School of Information Management, Wuhan University, Wuhan, China

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## Abstract

This paper examines the factors influencing consumers' intention to continue using a new pattern of online group-buying, which benefits consumers from high discounts and is prevalent in many countries of the world since 2009. A theoretical model is proposed based on Expectation-Confirmation Model of IS Continuance (ECM-ISC) from the previous IS continuance literature, integrating with e-recovery service quality, perceived risk and two external variables. Data collected from a questionnaire survey of OGB consumers provides empirical support for the proposed model. The results indicate that consumers' satisfaction with prior use and perceived usefulness significantly influence consumers' continuance intention. Consumers' satisfaction is determined primarily by consumers' confirmation of expectation from prior use and secondarily by perceived e-recovery service quality. Further, confirmation also has a significant influence on post-acceptance perceived usefulness. Confirmation, in turn, is significantly influenced by both product quality and information quality. Some suggestions for practitioners are also offered.

**Index Terms:** Online Group-buying; Continuance Intention; E-commerce; ECM-ISC; Consumer Satisfaction

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## 1. Introduction

After the foundation and success of Groupon ([www.groupon.com](http://www.groupon.com)) in U.S in the end of 2008, online group-buying (OGB) surged another wave in e-Commerce domain. Compared to traditional OGB pattern, Groupon is distinguished with some unique characters. First, traditional one usually aggregates a variety of disparate buyers with similar purchase intention via the web to get bargaining power by quantity advantage, and eventually benefits from bulk buying. The core lies in demand aggregation and quantity discounts<sup>[1]</sup>. Demand aggregation is the precondition of group-buying transaction, while quantity accumulation is the key to the discount amount. In contrast, for Groupon pattern, demand aggregation is just a necessary condition other than sufficient condition. The selection of businesses by OGB sites and offline negotiation are the preconditions of OGB transaction. Furthermore, Groupon pattern doesn't require a high level of minimum quantity to achieve a transaction, and the discounts won't be changed once the minimum quantity is achieved. Second, Groupon usually chooses service trade (e.g. catering, recreation, hairdressing) with high margin for group-buying, which

\* Corresponding author:

E-mail address: <sup>\*1</sup> [imiswhu@yahoo.com.cn](mailto:imiswhu@yahoo.com.cn); <sup>\*2</sup> [shinsx@163.com](mailto:shinsx@163.com)

is also characterized as high constant cost but low marginal cost. Therefore, a higher discount can be provided and more buyers may be attracted. Besides, the value and price of products in OGB sites are usually rather low. That makes OGB a new powerful means of advertisement and popularity attraction for businesses. Third, Groupon is prevalent under the in-depth development of Web2.0. Social network service, twitter and other Web2.0 applications and communication tools offer great advantages to prompt and spread the OGB. In order to distinguish with the traditional one, we name the new pattern of online group-buying represented by Groupon as online group-buying 2.0.

Only a few months later, Manzuo ([www.manzuo.com](http://www.manzuo.com)), Meituan([www.meituan.com](http://www.meituan.com)), Lashou ([www.lashou.com](http://www.lashou.com)) and some other earlier websites kicked off the rapid development of OGB 2.0 in China. According to the *Survey Report of China Online Group-Buying (2010)* published by e-Commerce Research Center of China, more than 1500 OGB websites were founded and operated by Oct. 2010<sup>[2]</sup>. However, recalling the development history, many OGB sites shut down after a short-lived running with almost the same characters while still many new sites open without evident and unique features. The consumers are increasingly rational after experiencing the problems that exposed in the beginning of rapid development of OGB 2.0. As a new pattern of e-Commerce and group-buying, its persistent growing requires two important foundations: a large scope of registered users is the important antecedent and essential condition for survival, but a substantial amount of active users is the sufficient and necessary condition for success. Without continuous transactions, the initial registered users are difficult to bring about the expectant profits to the OGB sites.

From the perspective of theory research, that is, the eventual success depends on users' valid and continuous usage. Initial adoption is only the first step toward success, because users' intention and behavior in using OGB are changeable. However, most of the existing IT adoption models are considered as static time point, which is hard to explain the discontinuance behavior after initial adoption<sup>[3]</sup>. As to make up the defects of IT adoption theory, the research on information system continuance is now in the ascendant. The dynamic modeling of users' post-adoption intention and behavior is increasingly becoming the frontier field focused by IS scholars<sup>[3][4]</sup>.

As the OGB site is essentially an information system to meet some specific functions, this paper takes OGB 2.0, a new pattern of e-Commerce and group-buying, as the background to study the influence factors of users' continuance intention. A theoretical model is proposed based on literature review, and then is empirically examined by questionnaire survey. While enriching and deepening the IS continuance theory system, this study provides some theoretical instructions and practical implications for OGB 2.0 pattern. The remainder of the paper proceeds as follows. The next section reviews and analyzes related literatures. The third section proposes a model of consumers' continuance intention and research hypotheses based on the new characters of online group buying 2.0. The fourth section describes the research methodology used to empirically test the research model. The fifth section presents the results of data analysis. The sixth section discusses research implications for the key findings of this study. The final section summarizes the conclusions, contributions and the limitations.

## **2. Literature Review**

### *2.1. Information System Continuance*

The principles of user behavior are always focused by information system research in the last two decades. Based on the technology acceptance model<sup>[5]</sup>, the theory of planned behavior<sup>[6]</sup>, and the innovation diffusion theory<sup>[7]</sup>, quite a lot of studies have examined variables that motivate individuals to accept a new IS, and how they do it. However, IS usage can be divided into two stages: initial adoption and continuous usage. While initial acceptance of IS is an important first step toward realizing IS success, long-term viability of an IS and its eventual success depend on its continued use rather than first-time use<sup>[8]</sup>. The importance of continuance, compared to acceptance, is evident from the fact that acquiring new customers may cost as much as five times

more than retaining existing ones<sup>[9]</sup>. Consequently, the research of IS post-acceptance is increasingly drawing a lot of interest.

Overall, the studies on IS continuance can be divided into two directions. The first one views continuance as an extension of acceptance behaviors, and implicitly assumes that continuance co-varies with acceptance<sup>[9][10]</sup>. These studies employed the same set of pre-acceptance variables to explain both acceptance and continuance decisions based on the existing IT acceptance models. Venkatesh et al. extended the TAM with short-term IS usage to forecast the user's continuance behavior through a longitudinal study<sup>[11]</sup>. The result showed that the correlation between the pre-acceptance variables of TAM and the IS continuance was not salient. Besides, some longitudinal studies also employed the TAM to analyze the post-acceptance usage and their determinants, but finding that it was difficult to explain the post-acceptance behavior exactly under the pre-acceptance theory models<sup>[12][13]</sup>.

On the other hand, some studies have begun to distinguish between initial adoption and continuance decisions and to identify different determinants of acceptance in these two stages. Bhattacharjee adapted the Expectation-Confirmation Theory (ECT), which was widely used in the consumer behavior literature to study consumer satisfaction, post-purchase behavior, and service marketing in general<sup>[14][15][16]</sup>, to theorize a new IS continuance model for explaining the post-acceptance behaviors. The process by which consumers reach repurchase intentions in an ECT framework is as follow<sup>[15]</sup>: the consumers form a satisfaction to a specific product or service based on the confirmation level between their expectation prior to purchase and the perceived performance from post-purchase, while the satisfaction becomes the reference to repurchase intention afterwards. Bhattacharjee's model revealed that user's continuance intention was positively determined by satisfaction with IS use and perceived usefulness of continued use. Users formed expectations about the online service, and their experience of the service performance determined their confirmation level, which in turn influenced perceived usefulness and satisfaction with IS use<sup>[8]</sup>. The Fig. 1 illustrates the key constructs and the relationships in Expectation-Confirmation Model of IS Continuance (ECM-ISC).

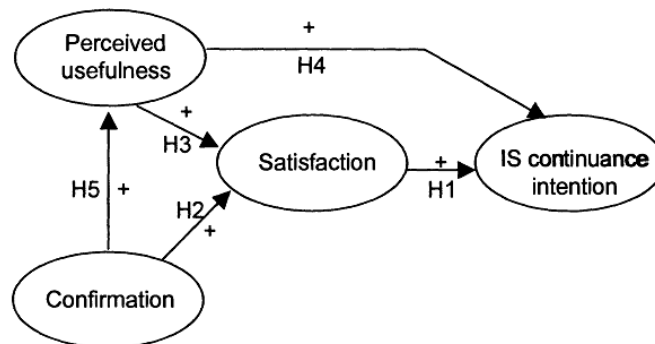


Fig. 1. An Expectation-Confirmation Model of IS Continuance

The ECM-ISC made some theoretical contributions to the research of post-acceptance behavior as follows<sup>[17]</sup>. First, it was the first time to genuinely concentrate the post-acceptance research without the pre-acceptance theory framework, which helped to better explain those questions that TAM unable to (e.g., why some users discontinue IS use after accepting it initially). Second, based on ECT theory framework, it enriched the constructs of IS continuance model with satisfaction, confirmation level, et al. As a critical factor of object-based attitude/belief, satisfaction was widely focused by the studies of IS continuance<sup>[4][18]</sup>. Third, it viewed perceived usefulness of TAM as the post-consumption expectation in the IS continuance model, and believed that users' perceived usefulness impacted attitude substantively and consistently during both stages of IS use, which overcame the ignorance of ECT that the customers' expectation would change potentially after initial adoption.

Except Bhattacharjee's efforts, some studies also investigated in the post-acceptance models. Limayem et al. extended the dependent variable of ECM-ISC from continuance intention to continuance behavior, and proposed user habit had a negative effect on the relationship between the continuance intention and behavior<sup>[19]</sup>. Hong et al. examined the IS continuance intention with TAM, ECM-ISC and their integrated model respectively<sup>[20]</sup>. The result showed that the integrated model with both pre-acceptance and post-acceptance framework gained the best explanation ability. Qin and Xu also integrated the influence factors from TAM and ECT and proposed a process-based information system adoption behavior model<sup>[21]</sup>. The longitudinal data indicated their dynamic model could well explain the adoption and continuance behavior based on different process. In contrast to pre-acceptance research, though the models and studies are not robust and prosperous, the importance of IS continuance research has been increasingly emphasized.

2.2. Customer Research on Online Group-Buying

As a new pattern of e-Commerce, online group-buying is widely focused by researches and practitioners. The extant studies primarily extended the antecedent group-buying research with the characters of Internet operation. Some quality studies analyzed the mechanism and profit pattern of online group-buying, and proposed that price, cycle and the external effect of demand were the essential factors influencing the transaction<sup>[22][23][24]</sup>. Some quantity studies investigated the foundation of online group-buying from the perspective of dynamic price mechanism<sup>[1][25]</sup>. However, few studies focused the acceptance and usage of online group-buying from the perspective of customers. Zhang and Lu employed TAM and perceived risk to empirically examine the influence factors of customers' intention to online group-buying<sup>[26]</sup>. But it's hard to explain the relationship between those factors and the customers' continuance intention. Moreover, with the new characters of Groupon pattern, the previous studies on traditional IS or e-Commerce continuance may not apply in the online group-buying 2.0. Whether this new wave of online group-buying can prosper continuously, to some extent, is determined by the customers' continuous loyalty and usage.

3. Research Model and Hypotheses

The ECM-ISC model has been widely examined in the field of IS continuance research. Based on ECM-ISC and the practical characters of online group-buying 2.0<sup>1</sup>, this paper proposes an extended research model that attempts to explain customers' continuance intention (See Fig. 2).

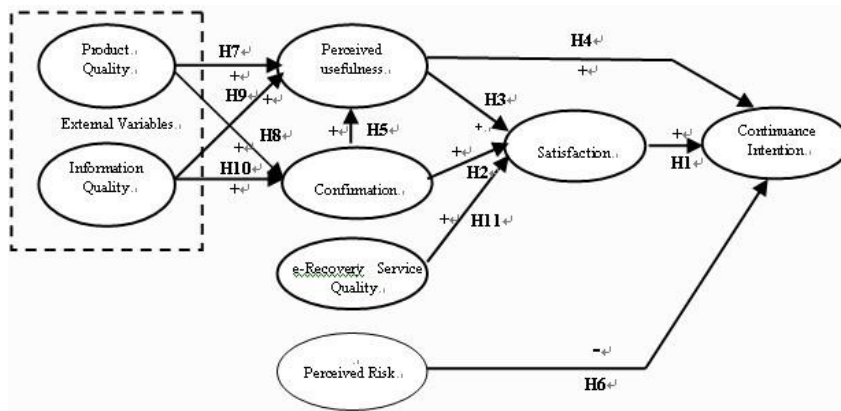


Fig. 2. Model of the effects on Continuance Intention to Online Group-Buying

<sup>1</sup> If no specific statement, all the other online group-buying in the reminder sections are meant to OGB 2.0 pattern

Per ECM-ISC, users' IS continuance intention is determined primarily by their satisfaction, which indicates the attitude towards prior IS use, and is determined by a serial of beliefs. Here we also view customers' satisfaction as the key influence factor of group-buying continuance, and propose the first hypothesis as follow:

***H1. Consumers' level of satisfaction with initial online group-buying experience is positively associated with their continuance intention.***

ECM-ISC posits that user satisfaction is determined by two constructs: users' perceived usefulness and confirmation of expectation following actual use. Some empirical studies suggested that perceived usefulness impacts attitude substantively and consistently during both pre-acceptance and post-acceptance of IS use, while perceived ease of use becomes non-significant in later stage<sup>[5][10]</sup>. Confirmation is positively related to satisfaction because it implies realization of the expected benefits of IS use, while disconfirmation (perceived performance lagging expectation) denotes failure to achieve expectation. Moreover, based on other theoretical rationales of ECM-ISC, we propose the following hypotheses:

***H2. Consumers' extent of confirmation is positively associated with their satisfaction with online group-buying.***

***H3. Consumers' perceived usefulness is positively associated with their satisfaction with online group-buying.***

***H4. Consumers' continuance intention is positively associated with their perceived usefulness of online group-buying.***

***H5. Consumers' extent of confirmation is positively associated with their perceived usefulness of online group-buying.***

Perceived risk was initially defined by Bauer in the context of consumer behavior<sup>[27]</sup>. He held that consumer behavior can be viewed as an instance of risk taking in the sense that any action of a consumer will produce consequences which he cannot anticipate with anything approximating certainty, and some of which at least are likely to be unpleasant. High perceived risk has been demonstrated to apt for leading the negative attitude, which will further decrease the consumers' purchase intention<sup>[28][29][30]</sup>. Some authors suggested that perceived risk can directly impact the consumers' purchase intention and behavior<sup>[31]</sup>. Zhang and Lu took perceived risk as variable of consumers' attitude towards online group-buying, and indicated that there was a strong negative correlation between them<sup>[26]</sup>. As most of products from online group-buying 2.0 are experienced goods<sup>[32]</sup>, the expectation of consumers' purchase behavior cannot be definitely confirmed in advance. If the probability of loss is somewhat evident from purchase experience, the uncertainty can negative influence consumers' re-purchase decision. Thus, we propose the following hypothesis:

***H6. Consumers' perceived risk is negatively associated with their continuance intention of online group-buying.***

In order to illustrate the incentives of perceived usefulness and confirmation more detailed, we propose some external variables which can indirectly impact the consumers' satisfaction and continuance intention to online group-buying. External variables are often used to examine how perceived usefulness and perceived ease of use can be influenced in TAM<sup>[33][34]</sup>. In terms of B2C e-Commerce, some empirical studies stated that the website quality, consist of product quality, information quality, system quality, delivery quality and et al., could effectively influence the perceived usefulness and perceived ease of use as external variables<sup>[35][36]</sup>. As most of OGB 2.0 websites are characterized as simple, easy-to-use and similar pattern of system design, there is not evident variance with system quality among different websites. Besides, most of the products in online group-buying 2.0 belong to service goods, as an intermediary platform between consumers and businessmen, delivery quality is rarely involved by OGB websites themselves. Thus, here we take product quality and information quality as the external variables to examine the correlation with perceived usefulness, given that perceived ease of use is not considered in our continuance model. Moreover, since most of products in online group-buying 2.0 are experienced goods, consumers cannot accurately evaluate the performance unless they have consumed

them before. Thus, the product information (e.g., the description and the pictures of products, the evaluation of previous consumers) provided by group-buying websites can directly impact consumers' expectation. If consumers encounter an unknown product and cannot find information from other sources except from group-buying website, the exaggerated or inadequate information will bring about improper expectation, which will lead to low level of confirmation. In addition, the overall expectation of product quality of OGB will also influence their final confirmation level. Consequently, we propose the following hypotheses:

***H7. Consumers' perceived product quality is positively associated with their perceived usefulness of online group-buying.***

***H8. Consumers' perceived product quality is positively associated with their extent of confirmation.***

***H9. Consumers' perceived information quality is positively associated with their perceived usefulness of online group-buying.***

***H10. Consumers' perceived information quality is positively associated with their extent of confirmation.***

Electronic Service Quality (e-SQ) is regarded as pivotal of B2C e-Commerce success, even though low price and web presence were initially thought to be the important drivers<sup>[37]</sup>. In order to measure the service quality delivered by B2C websites, Parasuraman et al. defined e-SQ and developed a multiple-item scale to measure it. They found that two different scales were necessary for capturing electronic service quality, E-S-QUAL and E-RecS-QUAL. The former scale was proved to mostly determine e-SQ level when customers first used the B2C Website, while the later one, with three dimensions: responsiveness, compensation, and contact, was salient only to customers who had non-routine encounters with the sites, and was proved that the recovery service quality affected customers' B2C service continuous usage. Lei et al. proposed a two-stage integrated framework that established the relationship between e-SQ and customers' B2C Website service continuous usage behavior based on Parasuraman's framework, and demonstrated that E-RecS-QUAL had a positive effect on consumers' satisfaction<sup>[38]</sup>. Although the study with respect to e-SQ and consumers' continuous adoption is not prevalent, it's still a worthy direction to understand the influence factor of consumers' continuance intention. Especially in the purchase pattern of online group-buying 2.0, consumers usually don't face to the businessmen directly. If they are cheated and encounter loss by businessmen after purchase behavior, whether and how they can be compensated might impact their satisfaction and further influence their re-purchase intention. In this paper, we also employ E-RecS-QUAL to measure e-recovery service quality provided by group-buying website when problems happen, and refine the three dimensions as follows:

- a) Responsiveness, effective handling of problems;
- b) Compensation, the degree to which the site compensates customers for problems;
- c) Contact, the availability of assistance through telephone or online representatives. Here we propose our last hypothesis:

***H11. Consumers' perceived E-RecS-QUAL is positively associated with their satisfaction with online group-buying.***

## **4. Research Methodology**

### *4.1. Data Collection*

Empirical data for this study was collected via a cross-sectional field survey of online group-buying consumers. The hyperlink to an online survey form was posted in the primary forums of online group-buying and some comprehensive BBS websites in China with the purpose of our study. After a two-week running, a total of 213 responses were obtained. Among them, 17 were rejected as invalid responses, including of

- a) 6 responses with apparent careless attitude (all 30 items were answered in less than 30 seconds),

- b) 4 responses with obvious self-contradiction front and back, and
- c) 7 responses without any online group-buying experience.

In the end, we got 196 usable responses to implement our analytical procedure. The primary age category of respondent group was 25-30, up to 58%, followed by the category of 18-24 years in the second place, up to 28%. 58% of the whole respondents were female. Only 2% had a high school education or below, 10% had some junior college, 47% had a bachelor's degree, and 41% had at least a master degree. The respondents subscribed to a wide range of professions (students, academics, enterprise employees, public servants, self-employed, et al.), and located in a wide area distribution of China as well. About 70% of respondents had one or two experiences in online group-buying, while 19% had 3-5 times and the left 11% had more than 5 times every month.

#### 4.2. Measurement Development

Eight constructs were measured in this study: OGB continuance intention, satisfaction, perceived usefulness, confirmation, perceived risk, e-recovery service quality, product quality and information quality. Constructs were measured using multiple-item scales, drawn from pre-validated measures in IS continuance use or B2C consumer behavior, and reworded to relate specifically to the context of online group-buying use. New questions were developed based on the literature review if necessary. All scale items used seven-point Likert scales anchored between "strongly disagree" and "strongly agree". Table I provides operational definitions and the scale items for these constructs.

### 5. Data Analysis and Results

#### 5.1. Analysis Method

The research model was analyzed using the structural equation modeling (SEM) technique, supported by AMOS 7.0 software. Model estimation was done using the maximum likelihood method. Data analysis proceeded in two stages: the measurement model was first examined for reliability and validity, followed by the analysis of the structural equation model for testing the associations in our research model.

#### 5.2. Evaluating the measurement model

The research model was analyzed using the structural equation modeling (SEM) technique, supported by AMOS 7.0 software. Model estimation was done using the maximum likelihood method. Data analysis proceeded in two stages: the measurement model was first examined for reliability and validity, followed by the analysis of the structural equation model for testing the associations in our research model.

The reliability and validity were initially examined to establish the strength of the measurement model. We used Cronbach's  $\alpha$  coefficient to assess the internal consistency reliability of all questions in this study. Previous studies have suggested 0.7 as an indicator of acceptable reliability<sup>[39][40]</sup>. Per data from Table I, all values of  $\alpha$  coefficient range from 0.855 to 0.966, which demonstrates that the reliability and consistency of all constructs are adequate.

The convergent validity of the measurement items was examined by confirmatory factor analysis (CFA). The test to 0.943 (CI3), which exceed the recommended level of 0.60<sup>[41]</sup>. In addition, the discriminate validity was examined by comparing the squared correlation between two constructs with their respective average variance extracted (AVE) measure. Table II shows the squared correlation of each pair of constructs and the AVE measures. The AVE measures of each construct are in the diagonal. It shows that all squared correlations between two constructs are less than the AVE measures of both constructs while the smallest AVE exceeds 0.6. These results show that all constructs in this study have adequate convergent validity and discriminate validity.

Table 1. Operationalization of Construct

Construct (Reference)	Operational Definition	Scale Item	Cronbach's $\alpha$	Factor Loading
<b>Continuance Intention</b> <sup>[8]</sup>	Consumers' intention to continue participating in OGB.	CI1: I intend to continue using OGB rather than discontinue it in the future.	0.922	0.943
		CI2: My intentions are to continue using the special offer by participating in OGB when I consume the same or similar products/services in the future.		0.907
<b>Satisfaction</b> <sup>[8]</sup>	Consumers' affect with (feelings about) prior OGB experience.	How do you feel about your overall experience of OGB use S1: Very dissatisfied/Very satisfied.	0.963	0.937
		S2: Very displeased/Very pleased		0.932
		S3: Very frustrated/Very contented		0.928
		S4: Absolutely terrible/Absolutely delighted		0.926
<b>Perceived usefulness</b> <sup>[36]</sup>	Consumers' perception of the expected benefits of OGB use.	PU1: Using OGB brings me great benefits	0.881	0.879
		PU2: Overall, OGB is useful to me.		0.895
<b>Confirmation</b> <sup>[8]</sup>	Consumers' perception of the congruence between expectation of OGB use and its actual performance.	C1: The cost-performance of products or service provided by OGB is better than I expected.	0.920	0.887
		C2: My experience with using the products or service provided by OGB is better than what I expected.		0.897
		C3: Overall, most of my expectations with OGB are confirmed.		0.887
<b>Perceived Risk</b> <sup>[30]</sup>	Consumers' perception of negative outcomes or losses caused by OGB use	PR1: I think the risk of using OGB would be (Very big – very small)	0.865	0.802
		PR2: I think the losses caused by OGB use would be (Very big – very small)		0.939
<b>Product Quality</b> <sup>[36]</sup>	Consumers' perception of the product quality, cost-performance and variety provided by OGB.	PQ1: The quality of products or services provided by OGB is good.	0.839	0.790
		PQ2: The cost-performance of products or services provided by OGB is high.		0.854
		PQ3: The variety of products or services provided by OGB is rich.		0.754
<b>Information Quality</b> <sup>[36]</sup>	Consumers' perception of the overall information quality provided by OGB websites.	IQ1: The information about the products or services provided by OGB is useful.	0.873	0.740
		IQ2: The information about the products or services provided by OGB is detailed.		0.683
		IQ3: The information about the products or services provided by OGB is credible.		0.898
		IQ4: The information about the products or services provided by OGB is objective.		0.879
<b>e-Recovery Service Quality</b> <sup>[37]</sup>	Consumers' expectation with the recovery service delivered by OGB websites when problems happen.	RSQ1: The website can promptly handle the problems caused by OGB.	0.840	0.870
		RSQ2: The website can properly compensate my loss caused by OGB.		0.866
		RSQ3: It's convenient to contact the customer service representatives by phone or online message when problems happen.		0.675

Note: all factor loadings were significant at  $p < 0.001$  level



5.3. Evaluating the structural model

After assessing the reliability and validity, the hypotheses presented earlier were tested collectively by examining the structural model. The explanatory power of the structural model was assessed based on the amount of variance in the endogenous construct for which the model could account. Our structural model could explain 86.6% of the variance of consumers' continuance intention to Online group-buying, which greatly exceeds the 10% level suggested by Falk and Miller (1992) as an indication of substantive explanatory power. Fig. 3 shows the standardized path coefficients ( $\beta$ ), path significances and squared multiple correlation coefficients ( $R^2$ ). Support for each hypothesis could be determined based on the sign (positive or negative) and statistical significance for its corresponding path. Intention to continue OGB use was strongly predicted by perceived usefulness ( $\beta=0.627$ ) and satisfaction ( $\beta=0.343$ ), which explained 55% and 30% of the intention variance respectively. However, the hypothesis of negative association between perceived risk and continuance intention was rejected due to lack of statistical significance and positive sign with the path coefficient value. Satisfaction was predicted by confirmation ( $\beta=0.817$ ) and perceived recovery service quality ( $\beta=0.106$ ), which explained 67% and 9% of the satisfaction variance respectively. Whereas, the hypothesis of positive association between perceived usefulness and satisfaction was unsupported due to lack of statistical significance. Moreover, neither the hypothesis of positive association between perceived usefulness and product quality nor the one between perceived usefulness and information quality was supported because of poor statistical significance as well. Confirmation was a significant predictor of perceived usefulness ( $\beta=0.760$ ), explaining 63% of the usefulness variance. In turn, it was predicted by product quality ( $\beta=0.774$ ), and information quality ( $\beta=0.462$ ), which explained 53% and 31% of the confirmation variance respectively. Implications of these results are discussed in the next section.

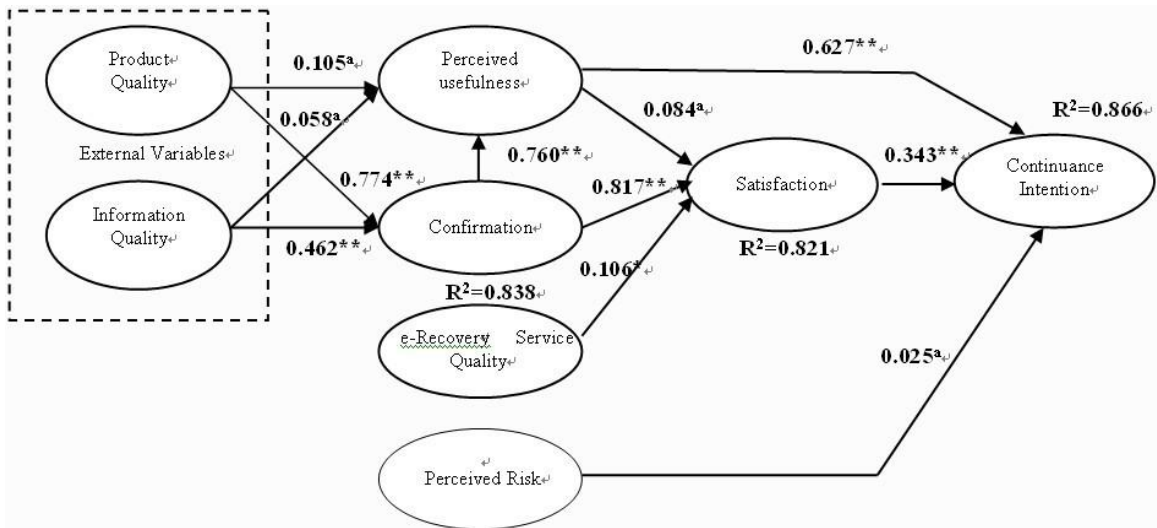


Fig. 3. Structural Model Analysis (Path significance:  $a_p > 0.05$ ,  $*p < 0.05$ ,  $**p < 0.01$ )

6. Discussion of Results

In this study, a theoretical model on consumers' continuance intention to OGB was formulated and examined. The results reveal that satisfaction and perceived usefulness are important predictors of consumers'

continuance intention. A little different with previous studies<sup>[8][17]</sup>, perceived usefulness was the stronger predictor of continuance intention than satisfaction in this study. As a new pattern of group- buying or online shopping, OGB 2.0 is fast prevalent and successful due to the rich profit of higher discount or lower price than traditional promotion. The low price, in turn, may induce merchant to bring down the service quality, which leads to consumers' low satisfaction. But if the profit of OGB is high enough to offset the negative effect of low satisfaction, consumers still view OGB useful and would like to continue using it. That may be a good reason to explain the difference in our study and the increasing prevalence of OGB 2.0. However, satisfaction is still a key factor to directly impact consumers' continuance intention. A continuous dissatisfaction may impel consumers to discontinue OGB use in the long term, despite having positive perceptions of its usefulness. Therefore, both OGB sites and merchants should well balance the low price and consumers satisfaction brought by service quality, based on which the profits of low price to consumers and of large sale volume to merchants can be persistent. In addition, perceived risk was not associated with continuance intention in this study, which may be also due to the low price of most products or services in OGB at present. If OGB sites turn to sale some products with high value and price, the perceived risk should be taken a considerable evaluation of the impact on consumers' intention.

Table 2. Comparison of squared correlation and average variance extract

	Product Quality	Information Quality	Perceived Usefulness	Confirmation	Perceived Risk	e-Recovery Service Quality	Satisfaction	Continuance Intention
<b>Product Quality</b>	<b>0.641</b>							
<b>Information Quality</b>	0.501	<b>0.648</b>						
<b>Perceived Usefulness</b>	0.611	0.528	<b>0.787</b>					
<b>Confirmation</b>	0.615	0.575	0.724	<b>0.793</b>				
<b>Perceived Risk</b>	0.211	0.186	0.229	0.242	<b>0.763</b>			
<b>e-Recovery Service Quality</b>	0.216	0.408	0.299	0.311	0.104	<b>0.654</b>		
<b>Satisfaction</b>	0.626	0.566	0.678	0.721	0.255	0.324	<b>0.866</b>	
<b>Continuance Intention</b>	0.585	0.504	0.759	0.643	0.229	0.309	0.720	<b>0.856</b>

Satisfaction with OGB was predicted primarily by users' confirmation of expectation and secondarily by their perceived recovery service quality when troubles happened, suggesting that OGB websites should provide consumers with adequate expectation to avoid low confirmation and satisfaction level, and with prompt and proper recovery service to reduce the consumers' negative emotions. Confirmation also had a significant positive effect on perceived usefulness, suggesting that user perception of OGB instrumentality may also be adjusted by their extent of confirmation. Nevertheless, perceived usefulness was not significantly associated with satisfaction in this study. Some previous researches also suggested that sometimes there is no significant correlation or even weak negative correlation between perceived usefulness and users' satisfaction under some situations of internet or mobile application<sup>[17][20]</sup>. Besides, the high extent of perceived usefulness may lead to a difficulty with producing high satisfaction.

For those two external variables, confirmation was significantly associated by both product quality and information quality, suggesting adequate information about the products or services and good product quality, high cost-performance and rich variety can lead to adequate expectation and high conformation level. Some OGB sites and merchants often provide some exaggerated descriptions and unduly subjective reviews in order to increase appeal, easily leading to over-expectation and low conformation level in the end. However, perceived usefulness was correlated by neither external variable. Compared to the information provided by OGB sites, more detailed and objective information and comments can be found in some vertical specialized websites concentrating merchant review (e.g. [www.dianping.com](http://www.dianping.com)), which have been prevalent before OGB websites. That may explain the weak association between perceived usefulness and information quality of OGB sites. The linkage of related comments from specialized websites for merchant review can be provided by OGB sites as supplementary. Finally, the targeted functionality of products or services provided by OGB could be the reason for the loose association between perceived usefulness and product quality. As most of the products provided by OGB sites are limited to service trade, consumers who consider one product is useful may think that it's useless to them. The consumer demand may account for the perceived usefulness as predict factor in the future study.

## **7. Conclusions**

The purpose of this study was to identify salient determinants of online group-buying continuance intention and to understand how they influence the dependent variable. Toward that purpose, ECM-ISC was adapted from the previous IS-continuance literature and integrated with e-recovery service quality, perceived risk and two external variables to formulate a model of OGB continuance. Data collected from a questionnaire survey provided empirical support for the proposed model. The results indicate that consumers' satisfaction with prior use significantly influence consumers' continuance intention, while post-acceptance usefulness perception is still robust and has a relatively stronger effect on the dependent variable. Consumers' satisfaction is determined primarily by consumers' confirmation of expectation from prior use and secondarily by perceived e-recovery service quality. Further, confirmation also has a significant influence on post-acceptance perceived usefulness. Confirmation, in turn, is significantly influenced by both product quality and information quality. This study made some novel contributions to the knowledge of consumers' continuance intention to online group-buying use. First, it demonstrated a "broader picture" of the continuance intention research on OGB 2.0, a new pattern of group-buying and online shopping prevalent since 2009, and empirically examined how the consumers' continuance intention was influenced. Some suggestions were provided for OGB practitioners. Second, it validated the ECM-ISC model in the field of online group-buying, integrating with perceived risk, e-recovery service quality and some external variables based on previous studies on online shopping or traditional group-buying and our current understanding of OGB 2.0. The results demonstrated a good validity and persuasion, which was instructive for academic researchers.

However, there are still some limitations of this study and thus further research issues can be addressed. First, compared to the tremendous amount of OGB consumers, the sample quantity we examined is a bit small, which might result in some incomprehensive conclusions. Those unsupported hypotheses in this study need further examination with larger sample volume. Second, though the results show a strong explanatory power, it is important to realize that some other factors and correlations also influence the continuance intention model. For Example, neither the association between product quality and perceived usefulness nor the one between information quality and perceived usefulness is supported, which implies the consumer demand or other variables might be the factor influencing perceived usefulness. Future research should enhance the explanatory power of antecedents affecting the endogenous variables. Finally, this study focuses on the general OGB domain. With the fast speed of development, many subdivisions of OGB market are emerging, which concentrate different products or people. So attempts to apply the results to the specific OGB groups or websites should be done cautiously. Further study can be targeted to examine the influence factors of consumer's continuance intention to some specific OGB websites.

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