

RESEARCH ARTICLE

Online Group-Buying Continuance Intention: An Extended User Experience Perspective On Expectation-Confirmation Theory

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Abstract

Although online group-buying has been proposed by various studies in recent years, the intention to continuous usage such topics remains insufficient, and the acceptance-discontinuance anomaly phenomenon, namely, users discontinue the use of online group-buying services after initially accepting them is frequently occurs. This study investigated the determinants of the online group-buying continuance intention of users with different levels of online group-buying experience, and examined the moderating effects of online group-buying experience on the relationships among the determinants. This study synthesized the expectation–confirmation model and technology acceptance model to establish a theoretical model for explaining and predicting the intentions of users to continue using online group-buying. The results reveal that user satisfaction and attitude are the primary determinants of the intention of users to continue using online group-buying, regardless of their level of online group-buying experience. In addition, the findings show that the experience of users in using online group-buying services plays an crucial moderating role. The implications of the findings for research and managerial practice were analyzed and are discussed in this paper.

Keywords: *Expectation-confirmation theory, Online group-buying, Technology acceptance model, User experience.*

Introduction

Online group-buying has attracted a lot of interest among academics and practitioners. Owing flexible and low-cost transaction-making, online group-buying has attracted the attention of consumers and providers [1-3]. Although lots of works have been discussed about online group-buying adoption issues [3, 4], few studies to talk about how to enhance the consumers' continuance intention with online group-buying. Studies on online group-buying thus far have been conducted in exploratory or qualitative. As the initial phrase in improving the consumers' continuance intention in online group-buying context, this study focuses on developing a model measuring online group-buying adoption and continuance intention.

Continuance intention in online group-buying area has been the emerging subject of increasing interest in recent years [5-7]. Nevertheless, a few studies to discuss the moderating effect of the users' experience on their continuance intention. Past researches Barnes [8-11] also indicated that

the broad gaps about the issue of moderator variables of continuance usages remain to improve. Hence, there are two goals in the this paper: (1) to investigate the determinants of continuance intention for distinct levels of user experience; and (2) to explore the moderating effects of user experience on the paths among the determinants in the online group-buying area.

Inspiring user experience perspective, this paper proposed an extended model from expectation-confirmation theory and technology acceptance model for exploring the potential determents and moderating effects of the online group-buying continuance intention of user with various levels of user experience. In order to measuring the direct or indirect effects on users' continuance intention, the model is consisted of five external constructs: confirmation, perceived usefulness, perceived ease of use, satisfaction and attitude. Toward that end, we review expectation-confirmation models, technology acceptance model and attempt to adapt them by

integrating characteristics of online group-buying.

Research Model and Hypotheses

Determinants of Continuance Intention

Past studies have suggested that many determinants caused a direct or indirect effect on users' continuance intentions for using new system or services, involving (1) user satisfaction [3, 12-15], (2) attitude [16], (3) perceived usefulness [12, 13, 16, 17], (4) perceived ease of use [18, 19]. Nevertheless, there are insufficient studies to explore the relationship between the initial acceptance and post-acceptance (continuance behavior) of online group-buying service.

Previous studies [3, 4, 20, 21] suggested that quality attributes of online group-buying services may be consisted of system quality, instructional quality and interactive quality. Service quality response for examining the difference between what user expects from a service and what is actually obtained, whereas system quality imply that the user perception of the online group-buying system corresponding to ease of use, reliability, level of technical support and the speed of response, respectively. Satisfaction causes a positive effect on users' attitudes and continuous usage [3]. These studies related to determinants of user continuance intention in the on online group-buying context also showed that satisfaction and perceived quality were significant factors of intention to use [3, 22]. .

The perceived usefulness in online group-buying area, which is illustrated as the extent to which a person believes that online group-buying can be a driving force towards achieving shopping product [3] or service, e.g., using the online group-buying service, I can increase my shopping performance. Similarly, perceived ease of use is defined as the extent to which a person believes that using online group-buying will be free of effort [3]. A lot of pervious TAM studies have indicated that perceived ease of use has a direct as well as indirect effect on attitude [14, 15, 23, 24]. In addition, some studies suggest that Perceived usefulness causes a direct impact on attitude [16].

Past researcher [25] suggests that attitude is a learned tendency in response to an object in a consistently favorable or unfavorable manner. Previous research also has indicated that satisfaction causes a significant and positive effect on individuals' attitudes toward services such as e-shopping [26]. In theoretical perspective, theory of reasoned action and the theory of planned behavior both suggest that beliefs affect attitudes,

which in turn influence users' behavioral intentions. Prior research findings also indicated that attitude significantly influences users' continuance intention in an online group-buying context [27, 28]. Moreover, some prior studies of user acceptance and use of technology have indicated that continuance intention is dependent on the users' attitudes toward information technology [29].

Effect of Previous Experience

Essentially, the longer time length of usage with that product or system will causes more depth user experience. Past studies have presented that user expertise tends to cause positive effect on user loyalty [19, 26, 30, 31]. The study [31] suggest that User expertise is a crucial moderator in the four-stage, model, that involving belief, affect, intention, and action loyalty. Moreover, users with more experience are more perhaps to establish a longer relationship with the provider than users with less experience. Past researchers [32] also suggested that the length of the relationship can cause moderating effect on the association between satisfaction and usage behavior.

Previous researchers [33] suggested that user experience is a critical moderator, which is varied between users with different levels of usage experience in their empirical study. Other researches [34] also have shown that for more experience users, re-usage intention is dependent on the perceived usefulness of the site, whereas for less experience user, the one of most critical determinant is the perceived ease of use of a website, which determining whether or not to reuse that website. The study also indicated that the evaluation of past experience exerts a stronger effect on affective loyalty for less experienced users than for more experienced users [31]. As above findings, it may be reasonable to anticipate that online group-buying experience can cause a moderating effect on the paths among perceived usefulness, perceived ease of use, satisfaction, attitude, and continuance intention.

Model and Hypotheses

According to literature review in previous section, which suggests that online group-buying experience causes moderating effects for shopping perception (perceived usefulness and perceived ease of use), satisfaction, attitude, and continuance intention in the online group-buying field. Therefore, this study proposed an extended model to investigate the determinants of continuance intention and explained the moderating effects of online group-buying experience. The model is an extension based on the technology acceptance model and expectation

confirmation theory. As shown in Fig. 1, the model was divided into six constructs: (1) confirmation (CONF), (2) user satisfaction (SAT), (3) perceived ease of use (PEU), (4) perceived

usefulness (PU), (5) attitude (ATT), and (6) continuance intention (CI).

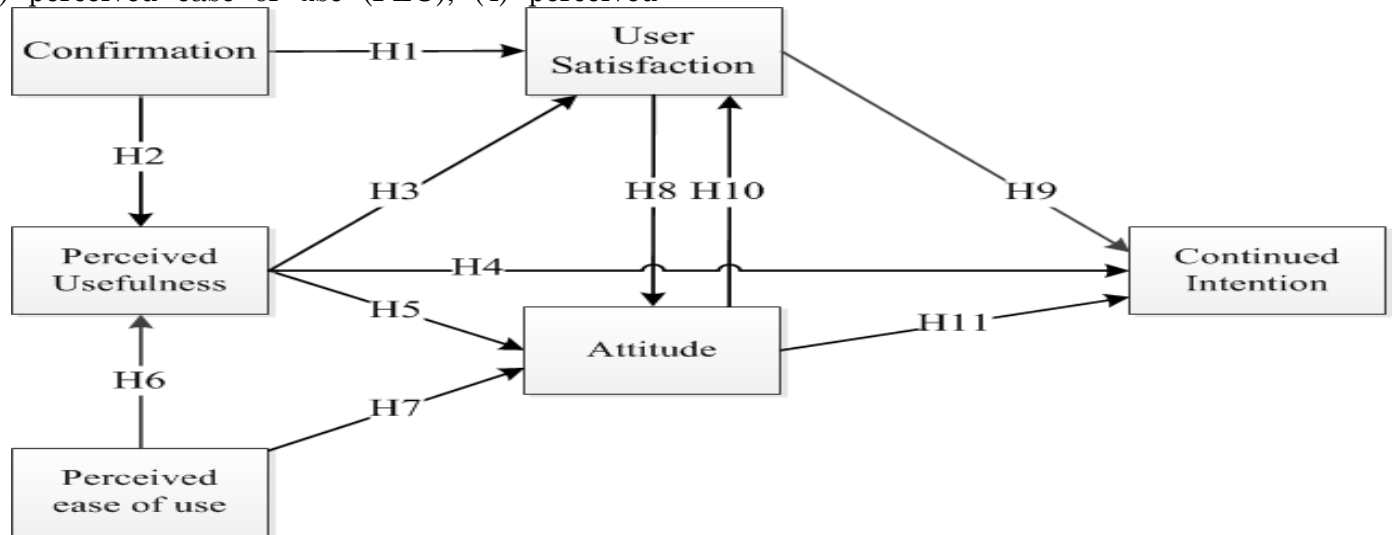


Fig. 1: Research model

In order to examine the effects of the users' prior experience of online group-buying on their judgment for continuous usage in online group-buying, the respondents were divided into two groups, namely, Group A contained the user with more experienced, whereas Group B involved those with less shopping experience. The research

model of this paper is illustrated as Fig. 1, which used to examine the primary determinants of continuance intention in the online group-buying context and to investigate the moderating effects of user experience by validating the following hypotheses.

- H1a. In both groups, confirmation of the online group-buying service has a positive effect on user satisfaction of the online group-buying service.
- H1b. The effect of confirmation of the online group-buying service on user satisfaction of the online group-buying service is significantly different between the two groups.
- H2a. In both groups, confirmation of the online group-buying service has a positive effect on perceived usefulness of the online group-buying service.
- H2b. The effect of confirmation of the online group-buying service on perceived usefulness of the online group-buying service is significantly different between the two groups.
- H3a. In both groups, perceived usefulness of the online group-buying service has a positive effect on user satisfaction of the online group-buying service.
- H3b. The effect of perceived usefulness of the online group-buying service on user satisfaction of the online group-buying service is significantly different between the two groups.
- H4a. In both groups, perceived usefulness of the online group-buying service has a positive effect on continue intention of the online group-buying service.
- H4b. The effect of perceived usefulness of the online group-buying service on continues intention of the online group-buying service is significantly different between the two groups.
- H5a. In both groups, perceived usefulness of the online group-buying service has a positive effect on attitude toward adoption of the online group-buying service.
- H5b. The effect of perceived usefulness of the online group-buying service on attitude of the online group-buying service is significantly different between the two groups.
- H6a. In both groups, perceived ease of use of the online group-buying service has a positive effect on perceived usefulness of the online group-buying service.
- H6b. The effect of perceived ease of use of the online group-buying service on perceived usefulness of the online group-buying service is significantly different between the two groups.
- H7a. In both groups, perceived ease of use of the online group-buying service has a positive effect on attitude toward adoption the online group-buying service.
- H7b. The effect of perceived ease of use of the online group-buying service on attitude toward the online group-buying service is significantly different between the two groups.
- H8a. In both groups, user satisfaction of the online group-buying service has a direct and positive effect on attitude

toward adoption the online group-buying service.

- H8b. The effect of user satisfaction of the online group-buying service on attitude toward the online group-buying service is significantly different between the two groups.
- H9a. In both groups, user satisfaction of the online group-buying service has a positive effect on continue intention of the online group-buying service.
- H9b. The effect of user satisfaction of the online group-buying service on continues intention of the online group-buying service is significantly different between the two groups.
- H10a. In both groups, attitude toward adoption the online group-buying service has a positive effect on user satisfaction of the online group-buying service.
- H10b. The effect of attitude toward adoption the online group-buying service on user satisfaction of the online group-buying service is significantly different between the two groups.
- H11a. In both groups, attitude toward adoption the online group-buying service has a direct and positive effect on continue intention of the online group-buying service.
- H11b. The effect of attitude toward adoption the online group-buying service on continues intention of the online group-buying service is significantly different between the two groups.

Methods

Instrument Development

For measuring the research model, the survey instrument is developed by adopting existing validated instruments wherever possible. Measurement items for EDT was adopted from [12, 13]. Measurement items for TAM were adopted from Davis [35]. Questions were anchored on a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree). To improve content reliability, the list of categorized measures was subsequently screened by an academic in charge of an e-Commerce student interest group. We also judged construct validity by determining convergent and discriminant validity based on the level of consistency within the categorization of items Moore [36]. A pilot study involving 58 users with prior online group-buying experience at the Cheng Shiu University was then conducted by Table 1. All items had high loadings on their related factors and low cross-loadings on other factors, showing good convergent and discriminate validities

sending the users an e-mail containing a hyperlink to the draft questionnaire.

Data Collection and Sample

To test the hypotheses, we conducted surveys on the online group-buying users. There were 289 responses, of which 223 were complete, giving a valid response rate of 77%, and the results of the pilot test were evaluated by using Cronbach's reliability and factor analysis. The reliability coefficient was first calculated for the items of each construct, and the standard lower bound for Cronbach's alpha set at 0.7 [37], with items that did not significantly contribute to the reliability being eliminated. A factor analysis was then performed to examine whether the items produced the anticipated number of factors and whether the individual items were loaded on their appropriate factors, the results were shown in

Table 1: Questionnaire items used in this study

Constructs measure and item description	Group A			Group A		
	Mean	S.D.	Loading	Mean	S.D.	Loading
Confirmation (CON) [12, 13]						
My experience with using the online group-buying system was better than I expected	5.57	1.08	0.88	5.40	1.02	0.81
The service level provided by the online group-buying system was better than I expected	5.59	1.03	0.82	5.42	1.07	0.85
The online group-buying systems can meet demands in excess of what I required for the service	5.53	1.02	0.89	5.41	1.03	0.84
Perceived Usefulness (PU) [35]						
Using online group-buying can improve my shopping performance	5.52	1.10	0.85	5.43	1.06	0.83
Using online group-buying can increase my shopping productivity	5.55	1.09	0.89	5.45	1.03	0.84
Using can improve my shopping effectiveness	5.54	1.06	0.91	5.43	0.98	0.88
I find online group-buying to be useful to me	5.49	1.07	0.84	5.39	1.01	0.89

Perceived Ease of use (PEU)

[35]

Operating the online group-buying system is easy for me	5.58	1.08	0.87	5.59	0.98	0.82
Interacting with the system does not require a lot of my mental effort.	5.61	1.09	0.90	5.63	0.09	0.89
I find it easy to get the system to do what I want it to do.	5.57	1.12	0.88	5.61	1.01	0.86
Overall, the online group-buying system is easy to use	5.59	1.14	0.83	5.63	1.04	0.87

User Satisfaction (SAT)

[12, 13]

I am satisfied with the performance of online group-buying	5.56	1.01	0.89	5.41	1.04	0.83
I am pleased with the experience of using online group-buying	5.54	1.02	0.91	5.40	1.02	0.86
My decision to use online group-buying was a wise one	5.59	1.05	0.85	5.43	1.06	0.89

Attitude (ATT)

[35]

Using online group-buying is a good idea	5.96	1.01	0.82	6.10	1.01	0.83
I like using online group-buying	6.04	1.02	0.87	6.04	1.02	0.85
It is desirable to use online group-buying	5.57	1.05	0.84	5.56	1.05	0.81

Continue Intention (CI)

[12, 13]

I will use the online group-buying system on a regular basis in the future	5.46	1.01	0.83	5.53	1.01	0.81
I will frequently use the online group-buying system in the future	5.47	1.02	0.86	5.48	1.02	0.83
I will strongly recommend that others use it	5.49	1.05	0.89	5.49	1.05	0.79

Analysis and Results

Assumed the newly extended model and measures, a confirmatory covariance based analysis (CBA), such as LISREL, was not appropriate. There are several reasons to use PLS for this study. First, PLS is capable of testing the psychometric properties of the indices, and produces better evidence for the relationships among constructs. Secondly, the framework of our study is exploratory in nature rather than confirmatory. Thirdly, PLS has three important intrinsic attributes: less rigorous standards regarding (1) sample size, (2) distribution parameters, and (3) levels of correlation between variables. In this Table 2 for both groups with different user experience. A common approach for testing reliability is using Cronbach's evaluation.[40] suggested that a generally accepted lower limit for Cronbach's alpha is 0.70, even though that may decrease to 0.60 in exploratory researches. For this study, Cronbach values for all constructs Table 2 for both groups. The CR for each construct must be greater than 0.7 and the AVE for each construct must exceed 0.5 [40].

Table 2, the standardized path loadings for all our questions were statistically significant and greater than 0.55. The Cronbach value for all constructs also exceeded 0.7. Therefore, the instruments used in this study achieved suitable convergent validity.

study, Smart PLS [38] and the bootstrap re-sampling approach were exploited to test the measurement and structural models. And then data analysis is conducted in accordance with a two-stage methodology [39] using PLS. The initial phrase in the data analysis was to establish the convergent and discriminant validity of constructs using the measurement model. The second phrase was to test the structural model.

Measurement Model

The reliability and validity of the measurement model were tested and shown in exceeded 0.8. Moreover, for convergent validity, we conducted two tests

following the study of [40], a composite reliability (CR) test and average variance extracted (AVE) test as presented in

According to the previous study Falk and Miller [40] suggested that the factor loading of each indicator should be greater than 0.55. As shown in

Next, we tested discriminant validity by observing the square root of the AVE for each construct with correlations between that construct and other constructs [40]. Results as presented in Table 3, the square root of the AVE for each construct exceeded correlations between that construct and

other constructs. Thus, the items used in this study had promising discriminant validity.

Model Testing

The hypotheses are assessed by Smart-PLS [38], exploiting the bootstrapping method. For estimating significance of the path estimates, the corresponding *t*-values for each path are calculated. Path coefficients and significances are reported in Fig. 2 for more experience user, and in Fig. 3 for less experience user. For more experience user, ten hypotheses were supported while one hypothesis (H4) was not supported, whereas eleven hypotheses were supported for less experience user.

significant. In previous study [41] indicated that highly collinear variables can cause misleading testing results. Therefore, we adopted the most widely used approach for avoiding collinearity is to measure variance inflation factors (VIF) and the condition numbers [41]. In order to remove collinearity, VIF values and condition indices were extracted, and a maximum VIF of greater than ten signals of harmful collinearity and condition indices greater than 30 indicate moderate to strong dependencies. The results were shown that VIF values were less than ten and that the condition indices were less than 30. Thus, multi-collinearity was not probable to significantly distort our testing results.

The non-significance of several hypotheses may be due to collinearity among constructs, because the correlations among the variables were high and

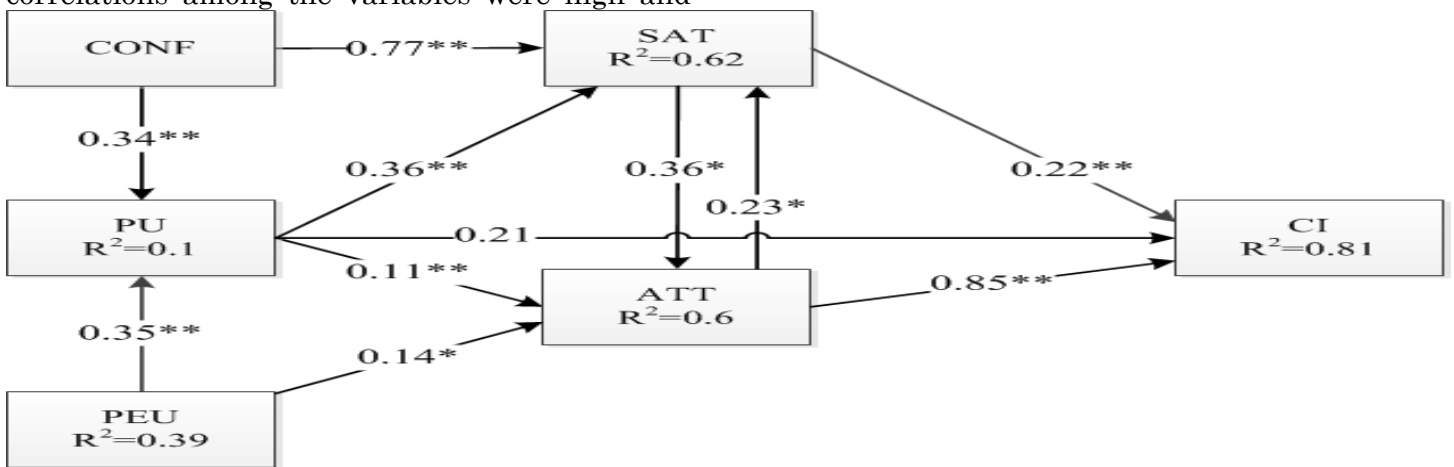


Fig. 2: Structural model for more experience user

Discussion

The results of this study provide support for the research model and for the hypotheses regarding the paths among the model's constructs with two

groups, namely, more experience user and less experience user.

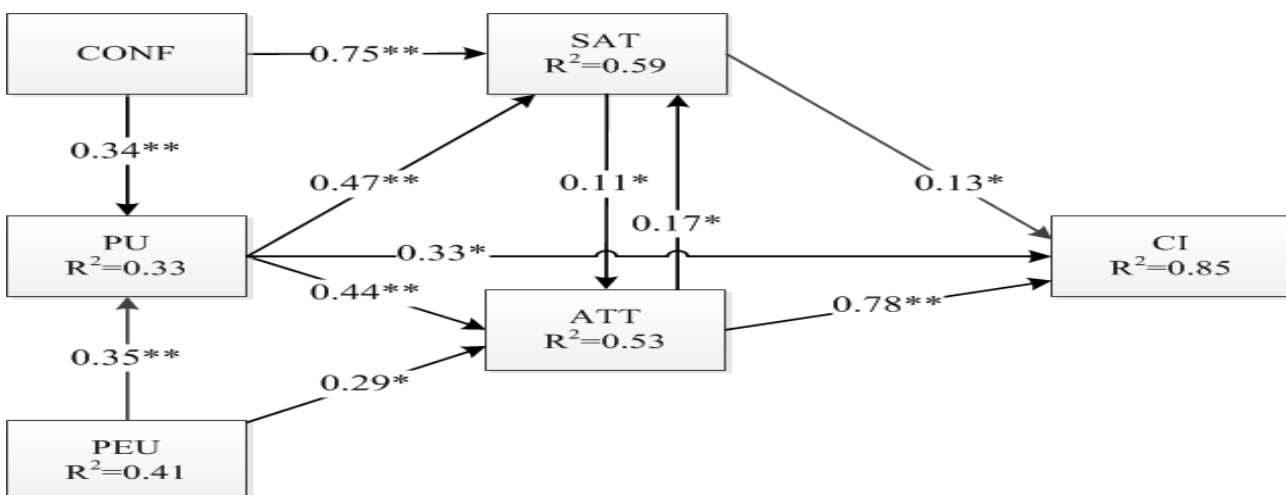


Fig. 3: Structural model for less experience user

Table 2: Summary of measurement scales

Construct Measure	Group A			Group B		
	AVE	CR	Cronbach α	AVE	CR	Cronbach α
CON1 CON2 CON3	0.76	0.891	0.83	0.76	0.891	0.83
PU 1 PU 2 PU 3 PU 4	0.683	0.840	0.903	0.683	0.840	0.903
PEU 1 PEU 2 PEU 3	0.689	0.913	0.917	0.689	0.913	0.917
SAT 1 SAT 2 SAT 3	0.684	0.954	0.926	0.684	0.954	0.926
ATT 1 ATT 2 ATT 3	0.834	0.934		0.834	0.934	
CI 1 CI 2 CI 3	0.804	0.826	0.897	0.804	0.826	0.897

Table 3: Correlation table

Construct		CON	PU	PEU	SAT	ATT	CI
CON	3.93 (1.31)	0.88					
PU	4.90 (1.07)	0.45	0.83				
PEU	5.21 (1.56)	0.45	0.33	0.86			
SAT	4.90 (1.32)	0.61	0.64	0.50	0.92		
ATT	4.64 (1.44)	0.56	0.62	0.63	0.68	0.90	
CI	4.73 (1.32)	0.57	0.68	0.71	0.69	0.73	0.87

For more experience user, the overall explanatory power of research model had an R-square of 81% for continued intention to use online group-buying and an R-square of 62% for satisfaction, and 60% for attitude toward adoption. Whereas, the overall explanatory power of research model had an R-square of 85% for continued intention to use online group-buying and an R-square of 59% for

satisfaction, and 53% for attitude toward adoption for less experience user. The results suggest that

the extended EDT model provide promising capability to explain a pretty good proportion of variation of continued intention to use online group-buying with user experience perspective. Several insightful findings could be concluded from the research model, and described as following.

Understanding Associations between Antecedent Constructs and Continuance Intention

This study assesses the effects of satisfaction, perceived usefulness, attitude on the adoption and continuance intention of online group-buying. The present findings indicate that regardless of the level of prior online group-buy experience, satisfaction is the strongest predictor of users' continuance intention, followed by attitude, perceived usefulness. The satisfaction-intention path has been validated widely in consumer behavior research and service contexts in past

literature [12, 13], and its revalidation in the online shopping context further ensure to the robustness of this association. Further, satisfaction may be the critical factor to explaining the online group-buying acceptance-discontinuance anomaly, i.e., user discontinuance of online group-buying after its initial acceptance. However, there is a little-understood phenomenon in past studies.

Previous literature suggests that satisfaction was the strongest determinant of continuance intention relative to the other determinants. Therefore, the satisfaction of user can determine

use whether adopt online group-buying or not, namely, user dissatisfied with online group-buying may stop using it, in spite of having positive perceptions with other elements, i.e., dissatisfaction is an essential requirement for online group-buying discontinuance. In contrast to TAM, the model utilizes perceived usefulness and attitude constructs to predict user intention, which cannot interpret this anomaly phenomenon.

The findings of this study indicated that perceived usefulness was a secondary determinant of continuance intention. In contrast to TAM related studies in IS acceptance area, there are emerging some interesting patterns. E.g., perceived usefulness was a more informative predictor of acceptance intention in TAM than attitude [33, 35], while satisfaction was a more informative predictor of continuance intention in this study than perceived usefulness, regardless user experience.

Previous studies suggested that attitude as well as satisfaction reflected the effect of user for pre-acceptance and post-acceptance, whereas well-known perceived usefulness construct is a cognitive belief. In terms of post-acceptance, satisfaction is based on users' first-hand experience, which affect user is more realistic, unbiased, and less perhaps to change. In contrast to pre-acceptance, attitude is based merely on cognitive beliefs, which comprise potentially through second-hand information from other sources, e.g. media, advertising or others.

These influences may be biased, and thus user attitude potentially may be inaccurate, unrealistic, and uncertain. According to above findings, we found that perceived usefulness is more tightly related acceptance intention, whereas satisfaction performs a more critical part in continuance intention. Thus, this study suggest that online group-buying practitioners should introduce a dual strategy for increasing adoption rate and continued usage of online group-buying: first, promote new users of the potential benefits of online group-buying use. Secondly, educate old users on how to use online group-buying effectively so as to maximize their confirmation and satisfaction with such approaches.

For more experience user, satisfaction causes a direct effect on continuance intention, whereas satisfaction causes indirect effect on the continuance intention of the users with less experience. Namely, the effect of satisfaction on continuance intention is weaker for less

experienced users than for more experienced users.

Understanding Associations between Antecedent Constructs

In this paper, the results reveal that confirmation was found to have the most significant effect on satisfaction, which indicates that the belief in confirmation of user is a critical antecedent of their perception of satisfaction. Additionally, perceived usefulness was a significant predictor of satisfaction and perceived ease of use in the proposed model, and then it influences continuance intentions in two (indirect) ways: by influencing online group-buying user's satisfaction toward the service and by impacting user's perceptions of its usefulness.

Implications

Implications for Academics

There are several implications in this study. Frist, from the theory building perspective, this paper strives to establish an innovation theory by incorporating new variables in an integration of two schools, i.e., the technology-acceptance model (TAM) as well as expectation disconfirmation theory (EDT), and applying them into a new field: online group-buying. Secondly, based on solid theoretical foundation, this method is promising to assure a stable theory development. Therefore, the presented model makes a favorable contribution to the emerging literature for online group-buying filed.

The present paper involves two implications for future research. First, the empirical tests show that the unified model has excellent explanatory power, implying that the collaboration of EDT, TAM provides an extended model with a solid theoretical basis to explain online group-buying context. This approach may serve as an initial work for inspiring the further integration of other theoretical acceptance models.

Implications for Practitioners

For online group-buying practitioners and system designers, they should provide richer multimedia features of the Internet to improve user understanding and memorization of the product information. Eventually, customers are more likely to adopt and continue to use online group-buying if they find that such services can enhance their shopping performance. Practitioners should make good use of shopping and browsing, coupon, and other creative approaches to enhance more fun and interest in the shopping process.

Furthermore, practitioners can use social network service and online forums to improve user synergism. For example, the idea “dynamic loop” proposed by [42] in eLearning area, they suggest that more users there are using eLearning system, the more user-generated experiences are likely to be exchanged, and the more new users the services will attract. Thus, we suggest practitioners should provide the strategy of Internet marketing for increasing number of users and improving their experiences in online group-buying.

Conclusion

This paper presented an extended model based on expectation-confirmation theory and technology acceptance model to understanding the potential deterrents and moderating effects of the online group-buying continuance intention of user with various levels of user experience. The finding indicates that five external constructs have a direct or indirect effect on the users’ continuance intention, i.e. confirmation, perceived usefulness, perceived ease of use, satisfaction, and attitude. The results also show that satisfaction and attitude are the critical constructs of continuance intention in the online group-buying context, regardless of the user’s prior level of online group-buying experience. Furthermore, the finding also indicates user’s experience plays a crucial moderating role in online group-buying service. E.g., the effects of satisfaction on continuance intention are stronger for more experienced users than for those with less experienced. Perceive usefulness and Perceived

ease of use cause a greater effect on the attitude and continuance intention for less experienced users, whereas satisfaction has a stronger effect on the attitude and continuance intention of users with a higher level of experience.

There are some limitations of this study which might be improved in future studies. First, the present findings indicate that the perceived usefulness and perceived ease of use of online group-buying is very critical to less experienced users. Thus, a future research direction should focus on establishing the time period required for a user becoming familiar with the online group-buying context such that the ease of use of the online group-buying becoming less of an barrier to its continued usage. Third, the moderating effects of online group-buying experience are only controlled on the consumer’s continuance intention in the present study. Therefore, we recommend that researchers should test whether other factors also have moderating effects affect continuance intention, e.g., gender, Internet experience, educational background, cultural factors, and socioeconomic status. Finally, this study has exploited user experience perspective to investigate online group-buying continuance decision; nevertheless, potential determinants of the continuance intention may exist. Thus, we suggest that future studies should establish more solid theoretical basis with other possible effects of exogenous variables such as social influence and the encourage conditions.

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