The Role of Perceived Value on Online Learning Applications' Users

Yuping Wu, Huayong Dai, and Mengchen Lin

Abstract—**This study bases on the customers' perceived value in the context of using online learning application (App). The aim of this study is to provide the development marketing strategy and product positioning in the future. This study investigates the relationships among satisfaction, trust, affective commitment and calculative commitment. This research adopts structural equation modeling. The results indicate that all hypotheses are supported. Perception value has significant and positive effects on both satisfaction and trust. Both satisfaction and trust has significant and positive effects on affective commitment and calculative commitment, respectively.**

Index Terms—**Online learning application, perceived value, affective commitment, calculative commitment.**

I. INTRODUCTION

In recent years, thanks to the advance of technology and the popularity of network, intelligent mobile device has become the important portable equipment in people's life. The App service carried by the devices has not only become the tide, it also creates many unlimited business opportunities.

Customers' perceived value is often deemed as the key factor most drastically influencing the behavioral outcome during decision-making of purchase [1], [2]. The customers' assessment before purchase, continual use after purchase [3] or the value perceived via customers will all further influence the future purchase intention. Therefore, the higher value perceived by the customer is, the higher expectation will produce in customers, and the purchase intention will also be stronger [4]. In the past research, few scholars discuss about the users' perceived value of using technology products. However, in the context of using online learning APP, when the users are faced with numerous novel mobile APPs, customers' perceived value will provide a key successful factor for application software suppliers to obtain the users' attention and promote to continue their downloading or purchase.

Among lots of researches concerning e-commerce, many scholars classify commitment into two different dimensions of affective commitment and calculative commitment [5]-[7], mainly focus on the consideration in affective and economic dimension between each other. In terms of customers, in addition to the factors of identity or dependence degree, they still need to assess the loss or cost produced by transformation, to consider whether to continue to maintain the relationship

with the products or service. This study aims to discuss the following: (1) effects of Customer's perceived value on satisfaction and trust, (2) effects of satisfaction and trust on affective commitment and calculative commitment.

II. THEORETICAL BACKGROUND

A. Perceived Value

Sweeney and Soutar [8] thought that perceived value is the satisfaction coming from different customers. In respect of the customers' assessment in the value of products or service, on one hand, the customers' expected performance and monetary value for products or service are required to be considered, on the other hand, the sense of pleasure and fun produced or brought by customers' use of products or service, as well as the social identity and sense of belonging conveyed by products or service to others are required to be included. This research adopted the four values proposed by Sweeney and Soutar [8] to discuss the customers' opinions of function value, emotional value, social value and monetary value in the context of using the mobile APP program, which will be used as the basis to measure customers' perceived value in this study.

B. Satisfaction

Sweeney and Soutar [8] thought that perceived value may occur in any stage during customers' purchase, also including the behavior without actual purchase, while satisfaction refers to the evaluation produced after actual purchase or use. In one investigation on satisfaction aimed at the use of mobile service in USA, it is found that satisfaction will enhance with the improvement of perceived value in emotion and money [9]. In the past researches, many scholars all think that the antecedent cause of satisfaction is the customers' perceived value [10]-[12] and satisfaction and perceived value are positively correlated. Cronin Jr. *et al.* [10] held that perceived value has positive influence relation with satisfaction, and the customers' perceived value will also influence customers' satisfaction attitude towards the accepted products or service. As a result, they will be more likely to be satisfied with the service. Customer satisfaction can be predicted from perceived value. The four dimensions of perceived value are hypothesized to influence customer satisfaction. Thus, we had the following hypotheses:

H1a: Functional value has a positive effect on customer satisfaction.

H1b: Emotional value has a positive effect on customer satisfaction.

H1c: Social value has a positive effect on customer

satisfaction.

H1d: Monetary value has a positive effect on customer satisfaction.

C. Trust

In the opinion of Morgan and Hunt [13], trust and commitment refer to the long-term cooperative relationship maintained between customers and suppliers, are also the composing elements to maintain commitment and establish success relationship.

Perceived value is the overall assessment between the cost paid and benefits obtained by the customers for products or service [14]. In addition, perceived value also explains customers' expectation psychology for transaction. The trading partners' perceived degree towards customers' trust is also a quite important measurement index [15]. The more positive the customers' perceived value is, the stronger the trust towards trading partners is, which also shows the positive influence relationship between customers' perceived value and trust [16].

As in this online learning App context, when customer perceived that her service value of an online learning application provider is higher, the will increased satisfaction, which will in turn lead to a higher customer trust. Thus, this study proposed that:

H2a: Functional value has a positive effect on customer trust.

H2b: Emotional value has a positive effect on customer trust.

H2c: Social value has a positive effect on customer trust.

H2d: Monetary value has a positive effect on customer trust.

D. Commitment

Morgan and Hunt [13] thought that commitment and trust have the close relation. When the commitment between the two parties appears, it is important for one of the two parties to identify the relationship between each other. Thus, they will spare no effort to maintain this relationship.

Commitment is classified into affective commitment and calculative commitment, which is proposed by Allen and Meyer [17]. Affective commitment refers to that sellers and buyers spare no effort to maintain the relationship between each other thanks to the delighted cooperative experience in the past. Also, the two parties enjoy the emotional attachment and sense of identity brought by such partnership. Calculative commitment refers to continuously maintaining the relationship due to involving switching cost or lacking the other alternatives. In the literature concerning word-of-mouth effect of online tourism websites researched by Nusair, Hua and Li [18], commitment is classified into two dimensions of affective commitment and calculative commitment, and commitment is deemed as the important and key intervening variable between satisfaction and word-of-mouth. The nature of service in online learning software store is transaction. This transaction platform is a kind of typical e-commerce platform.

E. Relationship between Satisfaction and Commitment

Cater and Zabkar [19] held that when customers' satisfaction increases, they will not calculate or explore the reason for continuing to maintain the relationship between

each other. Therefore, it is thought that satisfaction and calculative commitment are negatively correlated. Also, some scholars put forward that affective commitment and calculative commitment both belong to a part of commitment. Thus, it is thought that there also exists positive correlation between satisfaction and calculative commitment [20]. In the research concerning online tourism websites, Nusair [21] found that customers' satisfaction has positive influence relation with affective commitment. In the research concerning service marketing relation, it is also found that customers' satisfaction has positive influence relation both on affective commitment and calculative commitment [20].

In the context of using online learning App, when users feel better satisfaction towards the service provided by online learning App, it is better to obtain customers' affective identity and increase. In the context of online learning App use, customers with more satisfaction on online learning App seem more likely to show strong affective and calculative commitment. According, this study hypothesized that:

H3a: Satisfaction has a positive effect on affective commitment.

H4a: Satisfaction has a positive effect on calculative commitment.

F. Relationship between Trust and Commitment

Trust refers to the customers' confidence in suppliers while commitment refers to the willingness to maintain long-term cooperative relationship between two parties [21]. In many researches concerning e-commerce, many scholars regard trust as an important factor influencing commitment [22], classifying commitment into two different dimensions of affective commitment and calculative commitment [5]-[7]. It is also thought that trust should have significant positive influence relationship with affective commitment. Cater and Zabkar [19] thought that trust has positive influence relationship with affective commitment and has negative relationship with calculative commitment. As trust make two parties feel the sense of identity, they are willing to actively maintain the relationship between each other, further reducing to calculate the reason for continuous maintenance of relationship between each other.

Based on the above literature, in the context of using online learning App by users for this study, when customers produce trust in online learning App, i.e. producing trust in online learning software suppliers, thus, supplier can obtain customers' affective identity. To maintain the relationship between each other, customers' affective commitment will increase. Such commitment occurs when customers determine that the cost associated with stopping their use of online learning App or switching to another App provider is too high. Summarizing the above arguments, this study proposed the following hypotheses:

H3b: Trust has a positive effect on affective commitment.

H4b: Trust has a positive effect on calculative commitment.

III. METHOD

A. Data Collection

This research subjects for this research were defined as

users possessing mobile devices in China. The sample frame was defined as users using online learning App in China. The users are required to conform to all the following conditions: (1) using online learning App for at least half a year or more; (2) downloading or purchasing at least once or more in the online learning App software store.

This research adopted the stratified sampling method to distribute surveys in different districts in China. Seven hundred and fifty surveys were distributed and 408 valid surveys were returned. The response rate was 48.75%. Of the respondents 58.82% were male and 41.18% were female. 43.87% of the respondents were between the ages of 20 and 29. 52.94% of the respondents had at least a college degree. 33.82% of the respondents had annual income that was between ¥5,000 and ¥8,000.

B. Measures

The questionnaire was refined through expert review and was pilot tested with a convenience sample, 30 respondents. Items were revised before finalizing the main survey content. All the constructs used in the proposed model were measured using multi-item scales, adapted from previous studies that reported high statistical reliability and validity. The scales for measuring perceived value were adapted from Deng, Lu Wei and Zhang [23]. The items for measuring satisfaction were adapted from Cronin Jr., Brady and Hult [10]. The scale for trust was derived from Gefen, Karahann and Straub [24]. Affective commitment and calculation commitment items were adapted from Li, Browne and Chau [6]. All items were measured on a seven-point Likert-type scale (1: strongly disagree, 7: strongly agree).

IV. RESULTS AND DISCUSSION

Following procedures recommended by Anderson and Gerbing [25], this research conducted two analysis phases. First, the measurement model is estimated with confirmatory factor analysis (CFA) to test reliabilities and validities of the research constructs. Then, the structure model is used to test the strength and direction of the proposed relationships between researches constructs.

A. Measurement Model

To avoid common method variance problem or reduce its occurring, this research uses the methods developed by Podsakoff, MacKenzie, Lee, and Podsakoff [26]. Harman's single-factor test was conducted by Podsakoff and Organ [27]. This test assumes that if the common method variance exists, then when all the variables entered together, they will load on one single factor that will account for all the variance, or one factor will account for a majority of the variance. This study performed the exploratory factor analysis (EFA) and four factors with eigenvalue greater than one emerged. All 42 items of the total variance were less than 50%. In addition, this study also performed the confirmatory factor analysis (CFA) with all 42 items in the questionnaire. The model fit of the single-factor test was worse (Chi-square=6521.104, D.F.=629, GFI=0.479, AGFI=0.418, IFI=0.318, CFI=0.315, RMSR=0.164) compared with the model fit of the proposed model (Chi-square=949.083, D.F.=605, GFI=0.892,

AGFI=0.873, IFI=0.960, CFI=0.960, RMSR=0.074). The results indicate that CMV is not a significant problem in this research.

Results also support for the convergent and discriminant validity. As evidence of convergent validity, each item loaded significantly on its respective construct [25]. Evidence of discriminant validity exists when the square root of the average of variance extracted (AVE) in each construct exceeds the coefficients representing its correlation with other constructs [28]. As presented in Table I, the results indicate adequate discriminant validity.

TABLE I: DISCRIMINANT ANALYSIS FOR CONSTRUCTS

Constructs	FV	EV	SV	MV	SAT	TRU	AC	CC	CR	AVE
FV	0.812								0.896	0.660
EV	0.311**	0.850							0.912	0.722
SV	.149**	.152**	.807						.882	.652
MV	.150**	.177**	.217**	.875					.928	.765
SAT	.196**	.210**	.174**	.243**	.812				.853	.659
TRU	.267**	.314**	.224**	.271**	.294**	.797			.913	.636
AC	.171**	.179**	.168**	.244**	.274**	.277**	.784		.827	.614
CC	.280**	.285**	.169**	.225**	.267**	.266**	.189**	.797	.840	.636
Cronbach's α	.874	.912	.876	.926	.850	.910	.814	.838		

Note: FV: Functional Value; SV: Social Value; EV: Emotional Value; MV: Monetary Value; SAT: Satisfaction; TRU: Trust; AC: Affective Commitment; CC: Calculative Commitment; CR: Composite Reliability; AVE: Average Variance Extracted; Diagonal value is the square root of AVE; Lower triangle value is the Pearson correlation coefficient. $*p < 0.05$; $**p < 0.01$; $***p < 0.001$

B. Analysis of the SEM

The structural model provided evidence of a good model fit: $\chi2=949.083$, D.F.=605, $\chi2/DF=1.569$, GFI=0.891, AGFI=0.873, RMSR=0.054, RMSEA=0.037. Based on the suggestions of Jöreskog and Sörbom [29]) and Hair Jr., Black, Babin, and Anderson [30], the criteria of model-fit of this model would be adequate. Overall, the measurement model showed adequate fit. Fig. 1. shows that the hypotheses result and path coefficients. All hypotheses are supported with all path coefficients, $p < 0.001$.
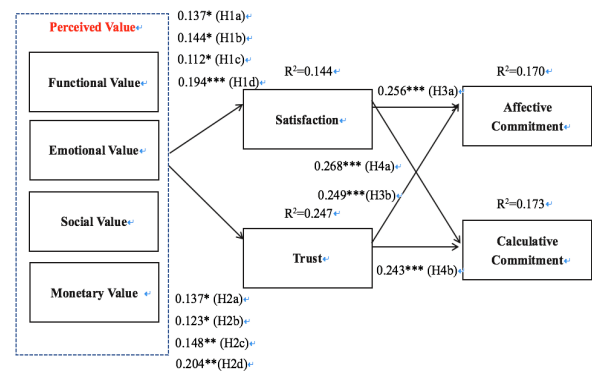

Fig. 1. Results of the structural model.

V. DISCUSSION

In the past researches, some scholars have used online learning App as the issue in relevant researches, however,

there are seldom scholars applying customers' perceived value in the research of online learning App. The researches concerning value theory in the past mostly put emphasis on fields related to tangible products or service [31]. Currently, there is still no research aimed at the perceived value in the novel mobile and virtual products or service. Consequently, this research used the customers' perceived value as the basis and discussed the customers' relationship with satisfaction, trust, affective commitment and calculative commitment in the context of using online learning App.

A. Summary of Findings and Managerial Implications

This research used the customers' perceived value as the core. In the past researches, it is found that most scholars usually conduct the research by considering perceived value as the single dimension. The customers' perceived value is often deemed as the key factor most drastically influencing the behavioral outcome during decision-making of purchase [1], [2]. The customers' assessment before purchase, continual use [3] after purchase or the value perceived via customers will all further influence the future purchase intention. This research results found that perceived value has positive effect on satisfaction, trust and commitment. According to the opinions of Sweeney and Soutar [8], this study classified perceived value into function value, emotional value, social value and monetary value mainly in that the application for these four dimensions is wider and they are consistent in nature. Besides, by adopting such value classification method, it can also fully reflect the value brought by online learning App to customers. Therefore, when downloading or purchasing online learning App, users will pay attention to whether the perceived value of their purchased products or service can conform to or satisfy their own needs, further producing the behavior of actual downloading or purchase. As online learning App belongs to one of the popular technology products, the customers' perceived value can be applied in the relevant research in terms of the similar issue of purchasing novel technology products by users in the future.

In regard of relationship quality, commitment is classified into two dimensions of affective commitment and calculative commitment. The research result shows that satisfaction and trust can significantly positively influence affective commitment and calculative commitment. Satisfaction has the greatest influence on both antecedent factors of affective commitment and calculative commitment. It shows that the better satisfaction the users feel over the service provided by online learning App can better obtain the users' attachment and affective identity. If users perceive that disusing the online learning App will generate loss and consideration of cost transformation, the calculative commitment over online learning App will increase. Therefore, it can prove that classifying commitment into affective commitment and calculative commitment in this research is valuable. On one hand, online learning App software providers can satisfy customers' sense of achievement through the game pleasure of online learning App and social sharing of interpersonal interaction. On the other hand, online learning App software providers should indeed master users' needs and improve users' adhesive capacity over online learning App, to further

intensify the frequency of continual use and obtain users' long-term trust relationship.

B. Limitations and Directions

This study adopted cross-sectional investigation, and there may be errors of measurement due to different times. Future studies can use longitudinal study, which can recognize the causal relationship in structural model and develop effective measurement tool for the following analysis and empirical study. Second, in terms of abstract subjects, it is suggested to increase the node of network questionnaire distribution, to design the inducement for filling and to increase the investigation on preference in the behavior of downloading and purchase, downloading or purchase category and degree of willingness to pay for it, aimed at users of online learning App with different characteristics. Thus, the influence of relevant factors and behavioral intention can be understood and comparative analysis can be conducted with this research, to seek for the more reliable argumentation. Third, it is suggested to further discuss their influence factors in the future research, such as benefits, appropriateness of technology or product involvement. We hope that future research will investigate these issues in the area.

REFERENCES

[1] J. N. Sheth, B. I. Newman, and B. L. Gross, "Why we buy what we buy: A theory of consumption values," *Journal of Business Research*, vol. 22, no. 2, pp. 159-170, 1991.
[2] J. C. Sweeney, G. N. Soutar, and L. W. Johnson, "The role of perceived risk in the quality-value relationship: A study in a retail environment," *Journal of Retailing*, vol. 75, no. 1, pp. 77-105, 1999.
[3] J. L. M. Tam, "Customer satisfaction, service quality and perceived value: An integrative model," *Journal of Marketing Management*, vol. 20, no. 7/8, pp. 897-917, 2004
[4] D. Grewal, K. B. Monroe, and R. Krishnan, "The effects of price comparison advertising on buyers' perceptions of acquisition value and transaction value, and behavioral intentions," *Journal of Marketing*, vol. 62, no. 1, pp. 46-59, 1998.
[5] S. P. Gounaris, "Trust and commitment influences on customer retention: Insights from business-to-business services," *Journal of Business Research*, vol. 58, no. 2, pp. 126-140, 2005.
[6] D. Li, G. J. Browne, and P. Y. K. Chau, "An empirical investigation of web site use using a commitment-based model, " *Decision Sciences*, vol. 37, no. 3, pp. 427-444, 2006.
[7] K. Nusair, "A model of commitment in B-to-C trave context: A structural equation modeling," Ph.D. dissertation, The Ohio State University, Columbus, OH, 2007.
[8] J. C. Sweeny and G. N. Soutar, "Consumers perceived value: The development of a multiple item scale," *Journal of Retailing*, vol. 77, no. 2, pp. 203-220, 2001.
[9] H. Lim, R. Widdows, and J. Park, "M-loyalty: Winning strategies for mobile carriers," *Journal of Consumer Marketing*, vol. 23, no. 4, pp. 208-218, 2006.
[10] J. J. Jr. Cronin, M. K. Brady, and G. T. M. Hult, "Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments," *Journal of Retailing*, vol. 76, no. 2, pp. 193-218, 2000.
[11] H. Oh, "Diners' perception of quality, value, and satisfaction: A practical viewpoint," *Cornell Hotel and Restaurant Administration Quarterly*, vol. 41, no. 3, pp. 58-66, 2000.
[12] S. Varki and M. Colgate, "The role of price perceptions in an integrated model of behavioral intentions," *Journal of Service Research*, vol. 3, no. 3, pp. 232-240, 2001.

[13] R. M. Morgan and S. D. Hunt, "The commitment-trust theory of relationship marketing," *Journal of Marketing*, vol. 58, no. 3, pp. 20-38, 1994.

[14] V. A. Zeithaml, "Consumer perceptions of price, quality and value: A means-end model and synthesis of evidence," *Journal of Marketing*, vol. 52, no. 6, pp. 2-22, 1988.

[15] A. Wong and A. Sohal, "Customers perspectives on service quality and relationship quality in retail encounters," *Managing Service Quality*, vol. 12, no. 1, pp. 424-433, 2002.

[16] A. Parasuraman and D. Grewal, "The impact of technology on the quality-value-loyalty chain: An agenda for future research," *Journal of the Academy of Marketing Science*, vol. 28, no. 1, pp. 168-174, 2000.

[17] N. J. Allen and J. P. Meyer, "The measurement and antecedents of affective, continuance and normative commitment to organization," *Journal of Occupational Psychology*, vol. 63, no. 1, pp. 1-8, 1990.

[18] K. Nusair, N. Hua, and X. Li, "A conceptual framework of relationship commitment-e-travel agencies," *Journal of Hospitality and Tourism Technology*, vol. 1, no. 2, pp. 106-120, 2010.

[19] B. Cater and V. Zabkar, "Antecedents and consequences of commitment in marketing research services: The client's perspective," *Industrial Marketing Management*, vol. 38, no. 7, pp. 785-797, 2009.

[20] M. Wetzels, K. De Ruyter, and M. Van Birgelen, "Marketing service relationships: The role of commitment," *The Journal of Business & Industrial* Marketing, vol. 13, no. 4/5, pp. 406-423, 1998.

[21] D. T. Wilson, "An integrated model of buyer-seller relationships," *Journal of the Academy of Marketing Science*, vol. 23, no. 4, pp. 335-345, 1995.

[22] M. A. Eastlick, S. L. Lotz, and P. Warrington, "Understanding online B-to-C relationships: An integrated model of privacy concerns, trust, and commitment," *Journal of Business Research*, vol. 59, no. 8, 877-886, 2006.

[23] Z. Deng, Y. Lu, K. K. Wei, and J. Zhang, "Understanding customer satisfaction and loyalty: An empirical study of mobile instant messages in China," *International Journal of Information Management*, vol. 30, no. 1, pp. 289-300, 2010.

[24] D. Gefen, E. Karahanna, and D. W. Straub, "Trust and TAM in online shopping: An integrated model," *MIS Quarterly*, vol. 27, no. 1, pp. 51-90, 2003.

[25] J. C. Anderson and D. W. Gerbing, "Structural equation modeling in practice: A review and recommended two-step approach," *Psychological Bulletin*, vol. 103, no. 3, pp. 411-423, 1988.

[26] P. M. Podsakoff, S. B. MacKenzie, J. Y. Lee, and N. P. Podsakoff, "Common method biases in behavioral research: A critical review of the literature and recommened remedies," *Journal of Applied Psychology*, vol. 88, no. 5, pp. 879-903, 2003.

[27] P. M. Podsakoff and D. W. Organ, "Self reports in organizational research: Problems and prospects," *Journal of Management*, vol. 12, no. 4, pp. 531-544, 1986.

[28] C. Fornell and D. F. Larcker, "Evaluating structural equation models with unobservable variables and measurement error," *Journal of Marketing Research*, vol. 18, no. 1, pp. 39-50, 1981.

[29] K. G. Jöreskog and D. S. Sörbom, *Lisrel 8, A Guide to the Program and Application,* Chicago: SPSS. Justis, RA, & Judd, 1993.

[30] J. F. J. Hair, W. C. Black, B. J. Babin, and R. E. Anderson, *Multivariate Data Analysis,* 7th ed. NJ: Prentice-Hall, 2010.

[31] B. J. Babin, W. R. Darden, and M. Griffin, "Work and/or fun: Measuring hedonic and utilitarian shopping value," *Journal of Consumer Research*, vol. 20, no. 4, pp. 644-656, 1994.

Yuping Wu is a lecturer in the School of Business Administration at Hubei University of Economics, Wuhan City, China. She earned her Ph. D. degree from National Dong Hwa University in 2016. She was elected as an International Economics Development Research Center (IEDRC) senior member in Mar. 2017. Her research areas include marketing management, e-commerce, lean service and strategic.

Huayong Dai received his Ph.D in management from Nanjing Agricultural University Nanjing City, China in 2007. He is an associate professor in the School of Business Administration at Hubei University of Economics (HBUE), Wuhan City, China. He is a dean of College of Business Administration at HBUE. His research interests include quality management, organizational culture.

Mengchen Lin is a lecturer in the School of Business Administration at Hubei University of Economics, Wuhan City, China. She received her Ph.D. in marketing management from Yuan Ze University, Taiwan in 2016. Her research in these areas has appeared in a Journal of Marketing Management, Chung Yuan Management Review, etc. Her research interests include consumer behavior, relationship marketing, internet marketing, and marketing strategy.