

# The Relationships among Trust, E-Satisfaction, E-Loyalty, and Customer Online Behaviors

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**Abstract:** Online shopping behaviors, different from traditional shopping behaviors, are related to information system and characterized with uncertainty, anonymity and potential opportunism. This paper is to conceptualize and analyze customer online behaviors, trust, customer satisfaction and customer loyalty based on Technology Acceptance Model (TAM). 1258 valid questionnaires are gathered from online customers having e-shopping experiences in Taiwan. Using structural equation modeling, the empirical results indicated that perceived use of use, perceived usefulness, and trust has the significant effects to facilitate customer satisfaction and customer loyalty, and further, effects customer's intentions and behaviors toward online purchasing.

**Keywords:** Technology Acceptance Model, Trust, Customer Behaviors, Customer Satisfaction, Customer Loyalty.

## I. Introduction

Internet/WWW usage changes ways of doing business as well as the way we live. The number of people who use the Internet has increased dramatically and has exceeded the 1.4 billion in the 2003 [1]. The electronic commerce and Internet business market has grown rapidly, at an exponential rate, accompanying the increase in the number of Internet users. According to a recent study by the Pew Internet and American Life Project, the Internet has gone from novelty to utility for many users, and an increasing number of customers are spending more time shopping electronically for books, music, and airline tickets and so on [2]. This is supported by a U.S. Census Bureau report, by U.S. Department of Commerce, that B2C EC reached \$69 billion in 2004, as compared to \$15 billion in 1999 [3]. These online-shopping trends indicate a remarkable potential and an alternative to the traditional brick-and-mortar shopping.

However, research indicates that 80%-85% of those that browse Web sites for goods and services do not engage in online purchases [4] [5]. Additionally, while many web users are motivated to start an online purchase transaction, 75% of them discontinue the transaction or are termed abandoning their shopping cart [6]. This implies that web users are

identifying attractive shopping opportunities on the web, but there are barriers and other concerns preventing the purchase from being completed. Besides, despite the recent rapid growth in Internet user numbers, the penetration rate of online-shopping is still low. One of the most plausible reasons is a lack of consumers' trust [7].

Moreover, in the online environments, it is more difficult for company to build customer loyalty when consumers can leave with just a mouse click away [8]. Although customer increasing their interactions with company through websites, there are plenty online shops offering the same product or service, customer can easily switch their purchasing decision than they do in physical environment. For the companies, attracting new online customers will be more difficult and costly to retain existing ones [9], therefore, customer satisfaction and customer loyalty are another important issues in online retailing.

Technology Acceptance Model (TAM) is developed to explore a user behavior model when an individual is using an information system [10]. TAM is a mature model because it has been validated in widely information contexts. This study, based on TAM model, expands the application on online environment to analyze customer online behaviors.

Recently, there have been a number of researches investigating online customer satisfaction or the role of trust in the specific context of e-commerce. However, it still lack of the understanding about the relationships between trust, customer satisfaction, customer loyalty, and online consumer behaviors with theoretical base. The objective of this paper is to explore the factors affecting online purchase intentions in consumer markets. Elucidation of online consumer behaviors will benefit e-venders in their efforts to sell products or services online in the future.

## II. Literature Review

### II.1 Electronic Commerce

Electronic Commerce (E-Commerce, EC) is described as "*the capability of buying and selling products on the Internet and other online services*"[10]. Generally, the business transactions that conducted in Internet technology such as computer, information networks, electronic data exchange (EDI) and so on are called EC.

The definitions of EC vary with different perspective [11]. In communication perspective, EC is the delivery of information, products/services, or payments over telephone line, computer networks or any other electronic means. In business process perspective, EC is the application of

technology toward the automation of business transactions and workflow. In service perspective, EC is a tool that addresses the desire of firms, consumers and management to cut service costs while improving the quality of goods and increasing the speed of service delivery. In On-line perspective, EC provides the capability of buying and selling products and information on the Internet and other online services. Communication process service on-line definition

EC are divided into three broadly recognized categories: intra-organizational, Business-to-Business (B2B), and Business-to-Consumer (B2C) [11]. Intra-organizational EC includes facilitating the organizational internal function and increasing the satisfaction of target customer. B2B EC is referred to facilitate and integrate the network form between organizations. B2C EC, is referred to improve the transaction between business and customer with electronic technique. Offering products/services in Internet is a kind of B2C EC and it is named as B2C. Making profit from the advertisement by establishing website attracted stream of people is another kind of B2C EC and it is named as C2B. The key of B2B EC is to establish good relationship with the co-operational partner. C2C EC is stressed on the credit of buyer and seller. Otherwise, B2C EC put more importance on security and identification. The key of C2B EC is to attract a great number of visitors to browse the website. The Internet business we discuss in letter is focused on the B2C EC.

## II. 2 Theory of Technology Acceptance Model

Technology Acceptance Model (TAM), developed by Davis in 1989, is one of the most influential research models in studies of the determinants of information systems/information technology (IS/IT) acceptance to predict the intention of use and acceptance of IS/IT by individuals. Based on TRA Model, TAM points out two particular beliefs—perceived ease of use (PEOU) and perceived usefulness (PU), to represent the antecedents of system usage in TAM. PEOU is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" and PU is defined as "the degree to which a person believes that using a particular system would be free of effort" [10]. In the TAM model, PEOU positively affects the PU. Moreover, PEOU and PU positively affect the attitude toward an information system, and further, positively affect individuals' intentions to use and accept of the information system.

Numerous empirical tests have indicated that TAM is a robust model of technology acceptance behaviors in wide variety of information systems and countries [12, 13, 14]. A website is, in essence, an information technology. As such, TAM is suitable to be applied in explaining online behavior. Accordingly, the following hypotheses were cast and tested:

- H1: A consumer's PEOU toward using online store positively affects his /her PU toward using the online store.
- H2: A consumer's PEOU toward using online store

positively affects his /her attitude toward using the online store.

- H3: A consumer's PU toward using online store positively affects his /her attitude toward using the online store.
- H4: A consumer's PU toward using online store positively affects his /her intention toward using the online store.
- H5: A consumer's attitude toward using online store positively affects his /her intention toward using the online store.
- H6: A consumer's intention toward using online store positively affects his /her behavior toward using the online store.

## II. 3 Trust and Technology Acceptance Model

Trust has different definition in the various social science literatures such as sociology, social psychology, and organizational behavior. Trust, in a social psychological sense, is the belief that other people will react in predictable ways. In brief, trust is a belief that one can rely upon a promise made by another [16]. In the context of e-commerce, trust beliefs include the online consumers' beliefs and expectancies about trust-related characteristics of the online seller [17]. The online consumers desire the online sellers to be willing and able to act of the consumers' interests, to be honest in transactions (not divulging personal information to other vendors), and to be capable of delivering the ordered goods as promised.

Many trust studies in psychology and organizational behaviors focus on interpersonal relationships; other trust studies in economic and strategy field, on the other hand, focus on the inter-organization relationships. However, the analysis of trust in the context of electronic commerce should be considered as the relationship between firm and individual aspects. The technology itself—mainly the Internet—has to be considered as an object of trust [18]. As a result, online shop also could be considered as an object of trust.

TAM has been considered a robust framework to investigate how users develop attitudes towards technology and when they decide to utilize it [10, 19, 20, 21]. Several studies have applied TAM and trust in their models. Based on the previous literatures, trust is a mixed belief-intention variable in trust studies. However, when trust is integrated into TAM, the trusting intention is replaced by the intention variable of TAM. In other words, trust in TAM is trusting belief, reflecting the online consumer wants the online sellers to be willing and able to act matching the consumers' interests, to be honest in transactions (and not divulge personal information to other vendors), and to be capable of delivering the offered goods as promised.

There are several studies have investigated trust based on TAM [13, 16, 24, 25]. After the literature review on customers' online trust and TAM model, we decided to integrate "trust" into our expanded TAM model. In order to focus on the relationships among trust and TAM concepts, we examine these studies again within the TAM framework.

Koufaris and Hampton-Sosa [23] and Pavlou [16]

suggested that customers' PEOU and PU of the website have positively effects on trust of e-vendor. These authors believe trust could reduce the need for consumers to understand, monitor, and control the situation and facilitate transaction and make it effortless. In the e-commerce context, trust would reduce the consumer's need to monitor the vendor's actions and check every detail, which make on-line transactions easier. Accordingly, the following hypotheses were tested in this study:

- H7: A consumer's PEOU toward using online store positively affects his /her trust U toward using the online store.
- H8: A consumer's PU toward using online store positively affects his /her trust U toward using the online store.

Most studies indicated that trust plays a significant role in determining a customer's actions regarding that company. Empirical research has shown that trust increases customer intention to purchase a product from a company [22] as well as intention to return to that company [26]. Some research indicated that customer trust (a belief) influences customer attitude. Based to the TAM, we believed trust affects attitude directly and trust also affects intention indirectly through attitude.

- H9: A consumer's trust toward using online store positively affects his /her attitude toward using the online store.
- H10: A consumer's trust toward using online store positively affects his /her intention toward using the online store.

## II. 4 Customer Satisfaction and Customer Loyalty in Virtual Environment

There are many studies investigated customer satisfaction in physical environment. With the rapid growth of e-commerce, researchers and managers are now interested at customer satisfaction in online settings. There are two theoretical perspectives related to satisfaction when customer online shopping. One is customer satisfaction from marketing perspectives, and the other one is user satisfaction about information system from information technology studies

In the marketing prospective, customer satisfaction is an individual's subjectively derived favorable evaluation about his or her consuming experiences. Customer's experiences of purchasing involves with several processes: need arousal, information search, alternatives evaluation, purchase decision, and post-purchase behavior [27]. Although consumer behavior in e-commerce contexts is essentially the same as any other consumer behavior, there are certain technology related features that play a part in consumer decision making [28]. For example, in the online environment, Internet offers online user several benefits about information-search stage by reducing the search cost and increasing shopping convenience and the richness of information. However, in the evaluating and ordering stages,

customers lack for physical checking and they have the security problem when they purchase online. It implied the customer experience of online shopping is much different to traditional way. Because online shopping is an interaction between marketing and technological characteristics, customer satisfaction in e-commerce context is more complicated than physical environment.

Otherwise, technology information studies focused on the end-user satisfaction from information system (IS) using prospective. User satisfaction is considered a significant factor in measuring IS success and IS use [29, 30, 31, 32]. Empirical studies indicated the more satisfied users are, the more successful the IS facilitate is. Moller and Licker [33] applied IS success model to investigate the e-commerce system success and they indicated that the user satisfaction toward e-commerce system is one of the determinants to e-commerce system successes.

In the e-commerce contexts, customer satisfaction toward online shopping is composed of customer satisfaction in purchasing process and user satisfaction in using information system (in this case, information system means website). We merge marketing prospective and IS prospective about satisfaction as "E-satisfaction" to explore the customer satisfaction when they shopping online. In this research, E-satisfaction is defined as the customer's pleasurable fulfillment about his or her prior online experience (including browsing experience and purchasing experience) with a given electronic commerce website.

Satisfaction is usually defined as to customer favorable or unfavorable feeling about the prior experience in marketing literature. Operationally, satisfaction is an attitudinal variable, because satisfaction represents favorable or unfavorable feeling which is related to judgments. Clarke [34] also indicated that satisfaction is an attitude to determine future behavior based on the analysis of the service-buying process. She stated that there is an evidence of a robot result that customer satisfaction is an attitudinal variable. In TRA and TAM's belief-attitude-intention-behavior model, attitude is measured by the person's favorable or unfavorable feeling about performing the behavior. Adamson and Shine [35] also indicated that TAM could be used to explore use satisfaction. Therefore, we believe customer E-satisfaction is a facet of attitude to predict customer's intention and behavior toward using website and we integrate customer E-satisfaction as an attitudinal variable into customer online behavior model based on TAM framework.

- H11 : PEOU toward using at online store positively affects E-satisfaction.
- H12: PU toward using at online store positively affects E-satisfaction.
- H13 : Trust toward website will positively affect E-satisfaction in the using behavior model.
- H14: E-satisfaction will positively affect intention toward using the online store.
- H15: E-satisfaction will positively affect behavior

toward using the online store.

While the importance of customer has been mentioned in the marketing literature, the conceptualization and empirical validation of customer loyalty in e-commerce context has seldom been addressed [36]. In the online environments, it is more difficult for company to build customer loyalty when consumers can leave with just a mouse click away [8]. There are plenty online shops offering the same product or service, customer can easily switch their purchasing decision than they do in physical environment. On the other hand, e-vendor can create more profit than before, because customer increasing their interactions with company through websites. According to Griffin [37], "one of the most exciting and successful uses of this revolutionary technology may be the Internet's role in building customer loyalty and maximizing sales to your existing customers." In increasingly competitive markets, being able to build consumers loyalty become the key factor in winning market share and developing sustainable competitive advantage [36]. In this study, "E-loyalty" is used in order to highlight the role of loyalty in e-commerce contexts when customer shopping online.

For lacks of consistent psychological meanings of loyalty, Oliver [38] purposed four stages of loyal formulation: cognitive sense first, then later in an affective sense, still latter in a conative manner, and finally in a behavioral manner.

We found that Oliver's model represents the similar concepts of TAM. Both of Oliver's model and TAM believe cognitive (belief) first, then later in affective (attitude), still latter in a conative manner (intention), and finally in action (behavior). However, in Oliver's model, the definition in cognitive dimension is far away from the definition of loyalty in marketing literature. Besides, behavior dimension of loyalty in Oliver's model is basically reflective behavior concept in TAM. Therefore, the behavior dimension of loyalty could be replaced by the "actual behavior" in TAM. In Oliver's models, only the affective dimension and conative dimension match the definition of loyalty in marketing studies. Therefore, we purpose that loyalty is an attitudinal-intentional variable, involving in feeling and linking to purchase intention.

H16: E-satisfaction will positively affect E-loyalty in the using behavior model.

H17 : Attitude toward using at online store positively affects E-loyalty.

H18: E-loyalty will have a positively effect on intention toward using the online store.

H19: E-loyalty will positively affect behavior toward using the online store.

### III. Research Methods

#### III.1 Research Model

The relationships among trust, E-satisfaction, and E-loyalty towards other TAM constructs in this study are drawn as

Figure 1. In the Figure 1, there are three belief variables (PEOU, PU, and Trust), two attitudinal variables (attitude towards using the online shop and E-satisfaction), an attitudinal-intentional variable (E-loyalty). All of these constructs have directly or indirectly effects on customer intention and actual behavior toward using the online shop. Based on the literature review, E-satisfaction has three determinants: PEOU, PU and Trust. E-satisfaction also has three consequences: E-loyalty, intention toward using the online shops, and the actual usage. Additionally, E-loyalty plays as a mediator variable between two attitudinal variables, intention variable and behavior variables.

#### III.2 Measurement

These scales were established based on the reliability and validity of the TAM measures. Items of attitude toward purchasing online were modified from Suh and Han [24], Chau and Hu [20], in studies of consumer acceptance of electronic commerce. Items of purchase intention were adopted from Geffen and Straub [13,14] on their study of consumer behavior in B2C e-services. The scale of actual purchase behavior was captured with a standard item measuring on-line shopping frequency by Pavlou [16]. In addition, rather than devising a new scale for the dependent variable, this convention makes it possible to measure the dependent variable with extant scales that have been proven in measurement properties. Measures for trust are adapted primarily from Bhattacharjee [39], Suh and Han [24], and Pavlou [40]. The measurement items from the studies were collected and items with the same meaning were merged. Items of E-satisfaction and E-loyalty are adopted from Anderson and Srinivasan (2003) on exploring the relationship between E-satisfaction and E-loyalty. The items of E-satisfaction and E-loyalty, adopted from Anderson and Srinivasan [41], were based on the scale of customer satisfaction by Oliver [38] or Grewler [42]. All the items were measured on a seven-point scale ranging from strongly disagree (1) through neutral (4) to strongly agree (7). The higher values indicate higher degree of attitude, intention or actual purchasing online.

#### III.3 Sample

With purposive sampling method, a total of 3360 questionnaires were distributed through the 120 Executive MBA students and 4 lecturers of National Dong Hwa University in Taiwan. 2035 questionnaires were returned. We set a critical standard to define the "valid questionnaire". A questionnaire having more than 10 items clicked continually in the same score was considered to be invalid. Although the critical standard reduced the number of questioners, it could improve the quality of valid questionnaires. As a result, 88 were eliminated for conflicting and incompleteness and 689 respondents claimed they have never bought online. Eventually, 1258 valid questionnaires were collected. The net response rate is 37.8%. With descriptive statistic analysis, there was a relatively even split between males (46%) and females

(54%) respondents. The majority of respondents age from 21-35 years old representing 69% of the whole responses. In terms of occupation, the respondents reveal a quite even distribution: student (19%), service trades (20%), finance (15%), government/military (14%), business (12 %) and industries (9%).

Table 1 presented the results of factor analysis and alpha coefficients for each construct with reliability analysis. The

result of reliability analysis is shown as Table 1. Cronbach's alpha values of each construct are from 0.71 to 0.90, indicating a level above the 0.70, the threshold recommended by Nunnally [44]. Most of them are even above the 0.8. Additionally, the variance extracted values are from 53% to 69%, exceeding 50%. It reveals that the scale of trust exhibits strong internal reliability.

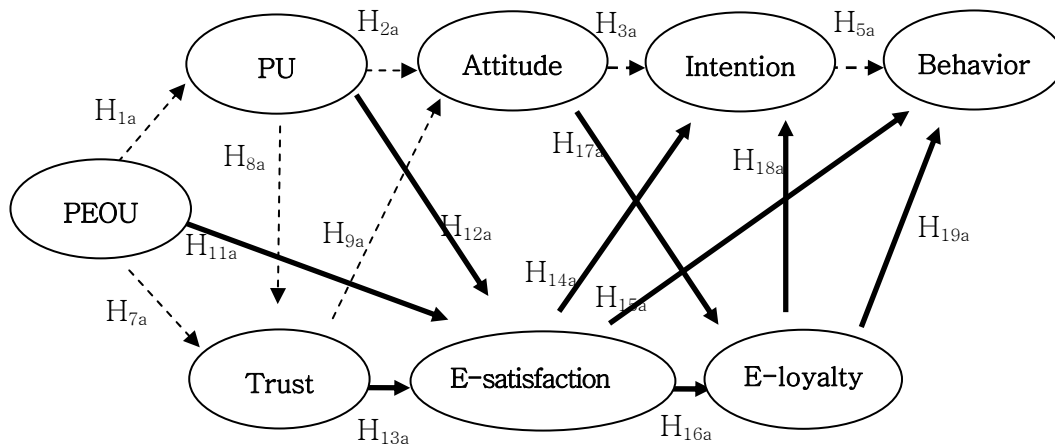


Figure 1 The Relationships among Trust, E-satisfaction, E-loyalty, and Customer Online Behaviors

Table 1 The Result of Reliability Analysis

	Number of Items	Variance Extracted	Scale Reliability (alpha)
Perceived ease of use (PEOU)	6	61.20%	0.87
Perceived usefulness (PU)	6	63.29%	0.88
Attitude	6	65.68%	0.89
Behavior Intention	5	65.91%	0.87
Usage(Actual Using Behavior)	4	53.19%	0.71
Trust	6	69.28%	0.90
E-Satisfaction	7	63.15%	0.90
E-Loyalty	6	61.31%	0.84

#### IV. Results and Discussion

After assessing the reliability and validity of measurement model, we tested the hypothesis and overall fit of the path model by using the maximum likelihood (ML) technique to estimate the parameters. The scale for each factor was set by fixing the factor loading to one of the indicators (items). The path coefficients and overall model fit indices of research model are drawn as Table 2 and Figure 2.

Table 2 Structural Equation Model Analysis

Hypothesis	Constructs	Coefficients
		s

	From	To	
H <sub>1</sub>	PEOU	→	PU
H <sub>2</sub>	PEOU	→	Attitude
H <sub>3</sub>	PU	→	Attitude
H <sub>4</sub>	PU	→	Intention

Table 2 Structural Equation Model Analysis (continuously)

Hypothesis	Constructs			Coefficients
	From	To		
H <sub>5</sub>	Attitude	→	Intention	0.65***
H <sub>6</sub>	Intention	→	Behavior	0.73***
H <sub>9</sub>	Trust	→	Attitude	0.53***
H <sub>10</sub>	Trust	→	Intention	0.32**
H <sub>11</sub>	PEOU	→	E-satisfaction	0.04
H <sub>12</sub>	PU	→	E-satisfaction	0.26**
H <sub>13</sub>	Trust	→	E-satisfaction	0.65***
H <sub>14</sub>	E-satisfaction	→	Intention	0.08
H <sub>15</sub>	E-satisfaction	→	Behavior	0.12
H <sub>16</sub>	E-satisfaction	→	E-loyalty	0.38***
H <sub>17</sub>	Attitude	→	E-loyalty	0.52***
H <sub>18</sub>	E-loyalty	→	Intention	0.23**
H <sub>19</sub>	E-loyalty	→	Behavior	0.18*

\* P<0.05

\*\* P<0.01

\*\*\* P<0.001

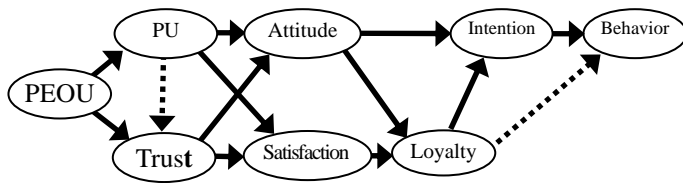


Figure 2 The Role of Trust, E-Satisfaction and E-Loyalty based on Technology Acceptance Model

## V. Conclusions and Limitation

### V.1 Conclusions

With the empirical results, the path coefficients of PEOU to PU (H1), PU to attitude (H3), attitude to behavioral Intention (H5), behavior intention to behavior (H6) are significant at the 0.001 significance. In other words, H1, H3, H5, and H6 are supportive. However, the effects from PEOU to attitude (H2) and PU to intention (H4) are not significant. It implies that there is a linear causal relationship among PEOU-PU-attitude-behavioral intention-behavior.

The purpose of this study was to explore the role of trust in the mechanism of online shopping. We hypothesized that trust is the consequence of PEOU and PU, and trust is also the antecedent of attitude and intention. The empirical results indicate that trust played similar roles as PU because it is the consequence of PEOU and the antecedent of attitude. As in previous researches, consumer trust, as PU, led to increase the using intention [13,14]. However, trust does not influence intention directly. Trust affects intention through the attitude mediator variable. Besides, trust might affect PU, but this is not supported in all online behavior models.

It is note worthy that consumer trust has a stronger effect on attitude than PU does. It corresponds to the result of Gefen and Straub [13, 14]. It implies that online shopping service depends not only on the operational characteristics of websites, its PU and PEOU, but also, and possible to a greater degree on consumer trust toward the websites. Therefore, managers need to take this into account in their website planning efforts. Furthermore, with the empirical results, it indicated that E-satisfaction was only affected by PU and Trust and E-satisfaction only affected E-loyalty. Although E-satisfaction not affects Behavior directly, it might affect Behavior through E-loyalty and Intention.

In the TAM model integrated Trust, E-satisfaction and E-Loyalty; there are three belief variables (PEOU, PU and Trust), three attitude variables (Attitude, E-satisfaction and E-loyalty), one intention variable, and one behavior variable. Belief variables positively affect Attitude toward website, and further, positively affect the individual's intention to use (including browse and purchase), finally affect the individual's actual using behavior. In addition, in three belief variables, PEOU was the antecedent of PU and Trust, and PU also had influence on Trust. Although PEOU was belief variable, it not affect other attitude variables directly, but

affect other attitude variables through PU and Trust. In three attitude variables, both Attitude and E-satisfaction were affected by PU and Trust, and affected E-loyalty. The Intention affected by Attitude and E-loyalty. The Behavior was affected chiefly by Intention and secondarily by E-loyalty. In briefly, Trust played the similar role as PU; E-satisfaction played the similar role as Attitude; and E-loyalty was the consequence of E-satisfaction/Attitude and the antecedent of Intention.

In the original TAM, Attitude was merely affect by PEOU and PU. However, we found Trust has had a stronger effect on Attitude than PEOU and PU did. The effect from PEOU to Attitude was even not significant in our models. It indicated trust was the most major belief factor to influence customer online behavior. Trust also the chief factor to affect E-satisfaction.

### V.2 Following Research and Suggestion

The sample in this study consisted of 1258 online customer having e-shopping experienced from various occupation (Student=19%, Service trades=20%, Financial =15%, Government/ Military=14%, Business=12% , Industry=9%), various age group (under 20 =11%, 21-25 group=23%, 26-30 group= 26.1%, 31-35 groups= 20%, 36-40 groups=11%, above 41= 8%, various websites, split of male (46%) and female (54%). It demonstrated the generalizability in our study and our results can generalizable to various types of customers and websites.

TAM is a mature model and has been validated in different contexts. Because Internet is a kind of technology, it is proper to applied TAM to explore the user (customer) behavior online. However, this is not without limitation. Because this is the first study to divide using behavior to browsing behavior and purchasing behavior, the validity of scales to measure each construct might be need to be confirmed for further studies. For examples, the reliability and validity of behavior construct didn't not perform as well as other constructs. It was resulted from the items measuring behavior were not measured on a seven-point scale. Not like the other perceived constructs could be measured with seven-point scale, the frequency and amount of browsing and purchasing were not proper to adopted seven-point scale and resulted in lower reliability and validity and it might further affect the results of research models. We hoped that further studied provide more guideline about this for web-based companies who are looking to improve their customer based and sales.

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