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Effects of Trust, Satisfaction and Factors Corresponding to TAM on Intention to Reuse Internet Business Transaction

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Abstract

The purpose of this research was to study the integration model of trust, satisfaction and other factors corresponding to TAM which had effected toward the intention to reuse internet business transaction. Four hundred questionnaires were disseminated through Facebook to social media users and complete data from 297 respondents who had experienced on internet business transactions were analyzed through PLS-graph and Two-stage Least Square (2SLS) techniques. The findings revealed that satisfaction had reciprocal effect with trust and had high effect toward the intention to reuse internet business transaction. However, even trust and PEOU had no direct effect toward intention to reuse internet business transaction, integration of TAM, ECT and trust could be used to answer the research questions under this context.

Key Words: *Technology Acceptance Model (TAM), Trust, Satisfaction, PLS, 2SLS*.

Introduction

The development of e-Commerce throughout the past till present, e.g. e-Retailing, Electronic Data Interchange (E.D.I.), Market e-Research, Voice over IP (VoIP) had led the e-Commerce to become the medium in business transactions. The internet business transaction is a simple interactive operation by simply pushes the button and fills in a brief message in the corresponding menu to complete the business transaction. The e-Commerce can support seller in presenting product / service through internet and seller can pull gather all customer data through the business intelligence system for the benefit of reuse internet business transaction. Amazon.com is a good example of internet business transaction which does not has to rely on brick and mortar shop and yet still can generate gigantic sale value and volume.

The attention should be critically focused on those factors which were able to retain customers doing internet business transactions with the same originated sellers. The continuance intention of customers were the critical key to survival of internet service provider (ISP), e-Retailer, e-Banking, m-Banking, e-Broker, e-Golf, e-Booking and many others. The important attentive concern was on how to pull customers to continue a long lasting reuse of internet business transactions as the costs in generating new customers would incurred from locating customers, creating their profiles and initiating business engagement which would had incurred costs of approximately 5 times higher than the maintaining of existing customers (Bhattacherjee, 2001). Under this circumstance, it was necessary to aware of factors effecting intention to reuse internet business transact-tions.

Previous researches revealed that there were numerous antecedences of intention of reuse internet business transactions, e.g. Technology Acceptance Model (TAM), (Davis, 1989) which consisted of Perceived Ease of Use (PEOU), Perceived Usefulness (PU) and Behavioral Intention (BI). Furthermore, it revealed that satisfaction was also a related factor that integrated TAM with Expectation-Confirmation Theory (ECT) through confirmation factor in ECT and PU in TAM (Bhattacherjee, 2001), and integrated PEOU i.e. complexity of technology under Diffusion of Innovation (DOI) (Roger, 2003) into TAM. Another factor was trust which integrated with TAM through TRA (Pavlou, 2001) and from the results of empirical researches that integrated trust with PU and PEOU (Chircu, Davis and Kauffman, 2000; Pavlou, 2003; Gefen, Karahanna, Straub, 2003).

Thailand has continuous increase of internet users by having 21.7 million users (National Statistics Office, 2014). Ministry of Information and Communication Technology (2014) revealed that internet business transaction users represented 18 and 21 percent transactions through mobile equipment and computer were 3.91 and 4.56 million users respectively. This user group often engaged in financial transaction of not less than 1,600 USD per transaction which would generate financial transactions over 6.5 and 7.6 million USD and engaged in business transactions of 1-5 times per three months generated financial transactions of not less than 32.5 and 38 million USD within three months duration. It was rather high cash flows that sellers ought to be attracted and aimed to share the market. If product / service internet sellers were able to pull customers to reuse through internet system, then it would generate a secure financial revenues and resulted in the expan-sion of none brick and mortar shop business, and as one of the major professional options. It was also the business with low barrier to enter/exit industry.

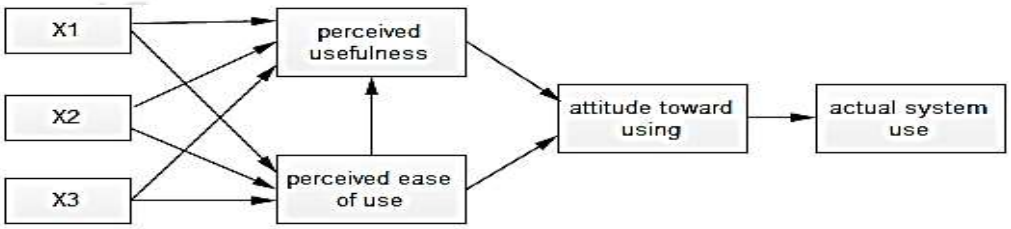
The research question was whether satisfaction, trust and other variables in TAM model can be applied as factors in controlling the reuse internet business transactions.

So, this research had objectives to study 1. Root causes of intention to reuse internet business transactions. 2. Factors effecting reuse of internet business transactions.

The literature review was conducted by study the technology acceptance model (TAM), expectation confirmation theory (ECT), satisfaction and trust in integrating fashion to construct the research model.

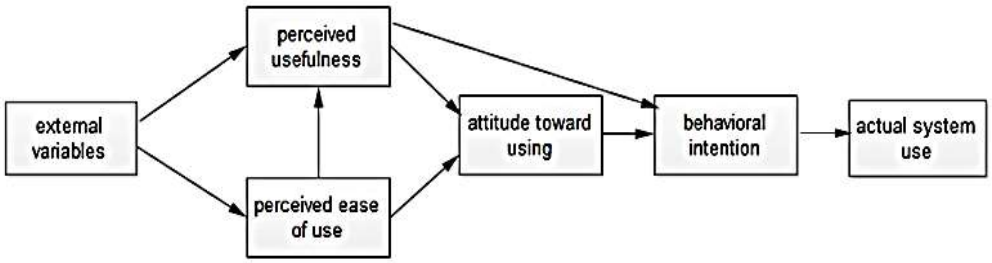
Technology Acceptance Model (TAM)

TAM had been developed by Fred Davis since 1985 during his doctoral study at Sloan School of Management, MIT. The main conceptual originated from S-O-R, i.e. the system usage was stimulated from motivation while motivation was stimulated from external stimulus by taking system feature and compatibility as stimulus for user's motivation to use system, organism, and actual system use as response. David integrated this concept to theory of reasoned action (TRA) which was developed by Fishbein and Ajzen (1975). TRA focused on the illustrated conscious behaviors on various general aspects (Ajzen and Fishbein, 1980), by behavioral intention was caused by attitude (A) and subjective norms (SN), i.e. BI = f (A, SN), by BI was the behavioral intention and was a determinant of actual system use in turn. Attitude (A) was the feeling toward the actual behavior which might be positively or negatively which can be shown in summand $A = \sum_i b_i e_i$ where "b_i" was the belief about the consequence of performing the behavior, "e_i" was the evaluation of the consequences. SN was the multiplication of normative belief (nb) i.e. perceived expectation of specific referent people or groups and motivation to comply (mc) with the expectation, i.e. $SN = \sum_i nb_i mc_i$. SN measured the level of how individual could comply the social expectation. Other than A and SN, TRA was proven to be effected from uncontrollable environmental variables called external variables, e.g. system design characteristics, user characteristics, task characteristics, nature of the implement process, political influence, social impact, organization structure, etc. which had effect toward "BI" through attitude. The early TAM had the following structure:



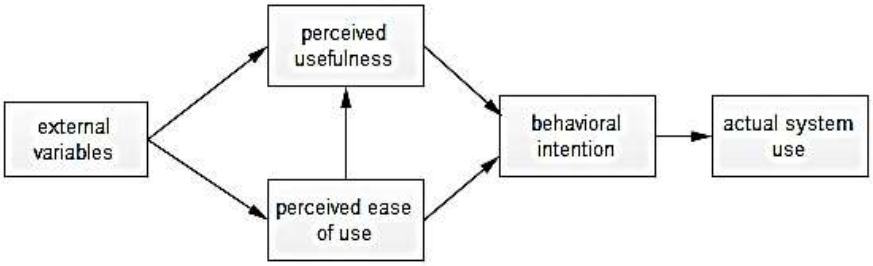
Picture *1*: TAM at early stage of development by Davis
Source: Working Papers on Information Systems 2009, *Overview of the Technology Acceptance Model: Origins*, Developments and Future Directions (p. 2) by Chuttur, M. Y., Indiana University, USA, Sprout, 9(37)

There was no "SN" in the TAM model, since the computer application in any organization was with voluntary or mere complying with supervisor. TAM considered A = f (PU, PEOU) which aligned with TRA that considered "A" as what generated from belief, i.e. PU and PEOU. And PEOU effected both A and BI. If system was easy to use (PEOU), users would have feeling of self-efficacy, control and perceived that system as a good tool. If there was further system improvement for even easier usage, it would further increase efficacy, lower work load, and increase productivity under same energy usage. Hence, it could be concluded that PU = f (PEOU, external variables) which indicated that even PU and PEOU were separated apart; they still could generate attitudes (Chuttur, 2009) as per Picture 2:



Picture *2*: TAM (First Version)
Source: User acceptance of computer technology: a comparison of two theoretical models, by Davis, F., Bagozzi, R. and Warshaw, P. R. (p. 985), Management Science, 1989, 35(8).

Actually, attitude arises from the belief that the system was easy to use and useful (Davis, Bagozzi and Warshaw, 1989). Reviews of PU and PEOU revealed that there were many external variables directly affected these two variables, i.e. easy to be used (PEOU), more precision, e.g. with much sharper graphic work or more productivity. Hence, the regression models were PU =f (PEOU, external variable) and PEOU = f (external variable). Hence, it could be believed that TAM integrated these 2 groups, i.e. perceived ease of use (PEOU) and perceived usefulness (PU) into another group i.e. behavioral intention and the actual system use group through TRA in order to study the computer usage behaviors. PU and PEOU were defined by Davis as; PU was the degree to which a person belief that the system would enhance his/her job performance, PEOU was the degree to which a person belief that the system would not waste energy or free of effort (Davis, 1989). Thereafter, Davis, Bagozzi and Warshaw (1989) cited that if individual believed that system useful, individual would cross over and adopt the system without forming attitude in a priory. Picture of TAM then illustrated in picture 3 below.



Picture 3: TAM (Final Version)
Source: Working Papers on Information Systems, 2009, *Overview of the Technology Acceptance Model: Origins, Developments and Future Directions* (p. 12), by Chuttur M.Y., Indiana University, USA. Sprouts, 9(37).

Measures of PU and PEOU was initially designed with 14 indicators at the content analysis stage. After conducting interview with 15 e-mail users to evaluate the content complication and ambiguity, both scales reduced to 10 indicators. Davis (1989) asked 112 IBM personnel in Canada to answer the remaining 10 items in 7 point LIKERT type scale in order to conducted reliability and validity analysis and then reached final scales of 6 indicators (Davis, 1989; Vankatesh and Davis, 1996; Chuttur, 2009). These indicators were exhibited as follows:

Table 1 Measurement of perceived usefulness

Perceived usefulness scale
1. Using CHART-MASTER in my job would enable me to accomplish tasks more quickly
2. Using CHART-MASTER would improve my job performance
3. Using CHART-MASTER in my job would increase my productivity
4. Using CHART-MASTER would enhance my effectiveness on the job
5. Using CHART-MASTER would make it easier to do my job
6. I would find CHART-MASTER useful in my job

Table 2 Measurement of perceived ease of use

Perceived ease of use scale
1. Learning to operate CHART-MASTER would be easy for me
2. I would find it easy to get CHART-MASTER to do what I want it to do
3. My interaction with CHART-MASTER would be clear and understandable
4. I would find CHART-MASTER to be flexible to interact with
5. It would be easy for me to be skillful at using CHART-MASTER
6. I would find CHART-MASTER easy to use

TAM model had been further developed from the original by only adding external variables on either PU or PEOU. TAM2 had specifically added 7 external variables on PU, i.e. subjective norm (SN), image, job relevance, output quality, result demonstrability, experience and voluntariness with the last 2 variables were moderators (Vankatesh and Davis, 2000). For TAM3, Venkatesh and Bala (2008) assigned external variables on PEOU by divided into anchor group and adjustment group. Anchor group consisted of computer self-efficacy factor, perception of external control factor, computer anxiety factor and computer playfulness factor. The adjustment groups consisted of perceived enjoyment and objective usability factor. It was noticeable that TAM2 and TAM3 were the modification of original framework in Picture 2 by expanding the external portion in more details and clarity (Venkatesh, Morris, Davis and Davis, 2003). TAM had been modified to UTAUT in various types afterward, by those variables on experience, gender, age and volunteer as moderators while other external variables on both PU and PEOP were classified into 4 factors as performance expectancy; level of belief that system able to improve better performance (or PU), effort expectancy; level of belief that system is easy to use (or PEOU), social influence; perception that other expect the level of system usage (or SN) and facilitating condition; belief on the level that organization facilitate system at sufficient level for usage.

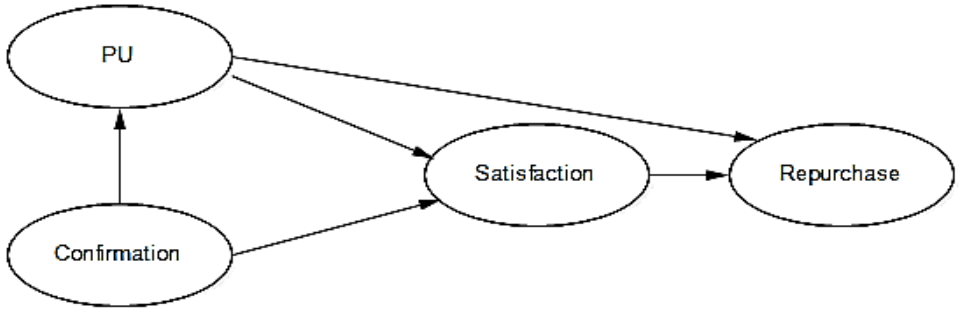
Satisfaction

Satisfaction arose from expectation whereas expectation was generated from past experiences, WOM or from information/data searching. Expectation was the pre-purchase cause of satisfactions whereas confirm-ation/disconfirmation was the at-purchase cause of satisfactions. If buyers did not expect or have a small expectation but it brought about something above expectation, buyers would generate satisfaction led to reuse of such transaction (Bhattacherjee, 2001). Hence, satisfaction was the mental condition prior to other behaviors to follow as per expectation-disconfirmation model. The study of Wen, Prybutok and Wu (2011) revealed that PU and confirmation effect satisfaction and satisfaction itself in turn effect reuse intention.

Satisfaction could be viewed in economic aspects, e.g. worthiness or in mental aspect, e.g. receipt of things as requested, promised or as acquainted with seller. Singh and Sirdeshmukh (2000) and Pavlou (2003) discovered that satisfaction affected trust. In the case of internet business transactions, satisfaction could occur from various causes, e.g. quality of website dialogue, customization i.e. the ability of user in specifying product/service property, the quality of seller, e.g. responsiveness, image, and technology quality as in PEOU and PU context. All these factors generated satisfaction through confirmation and led to trust worthiness (Suki, 2011).

Customer satisfaction could be divided into 2 types as per characteristic of service points. In case of brick and mortar, the satisfaction would associate with previous purchase experiences. Pleasure was on the choosing products, selecting products matched one self and happiness after purchasing. While in internet purchase, customers must rely on technology. The satisfaction would associated with cost in information search, the availability of information, convenience of ordering, and with disadvantages in lack of physical product presentation with only view through pictures and security system which seller had to ensure on customer privacy. Customers might be frustrated from the rigid dialogue. Both types of customer satisfaction were critical to business success. Adamson and Shine (2003) concluded that satisfaction was one dimensions of attitude, since it was the measures of affective component which was one of element of attitude. Hence, researchers can place satisfaction on attitude in TRA, TpB and TAM theories. Tang, Tsai and Wu (2005) said that the satisfaction of internet purchase was effected from PU and Trust, by Trust effected PU prior to satisfaction. Integration of satisfaction and some of TAM components can be done through Expectation–Confirmation Theory (ECT) (Oliver, 1980). This theory stated that expectation and perceived performance affected satisfaction through the confirmation/disconfirmation. Confirmation lead to satisfaction while disconfirmation lead to dissatisfaction. The process started from buyer set their expectations on product/ service in a prori which might be generated from WOM, passed experience or in search of information or data. After product or service has been receipted performance against expectation of whether confirmation or disconfirmation would be evaluated and lead to reuse the transaction consideration. Hence, satisfaction

was the mental condition arose from the comparison of expectation and confirmation. ECT checked the pre-consumption expectation with post-consumption expectation which was the expectation and perceived performance variables. Both variables were absorbed by confirmation and satisfaction. But the confirmation was the beliefs also was PU. Therefore, Bhattacherjee (2001) modified ECT by applying PU as post purchase confirmation, as follows:



Picture *4*: *Relation Model between* ECT and TAM
Source: Understanding information system continuance: Expectation-confirmation model, by Bhattacherjee, A. (p. 356). MIS Quarterly Vol. 25 No. 3, pp. 351-370/September 2001.

Findings from various studies indicated the relationship between PU, PEOU and satisfaction in same result. Hong, Thong and Tam (2006) revealed that PU had no effect toward satisfaction, but confirmation had positive effect toward PU, PEOU and satisfaction. Roca, Chiu and Martinez (2006) had similar discovered as Hong, Thong and Tam but with significance in all connection. Shipp and Phillips (2012) conducted research on satisfaction among social internet networks and revealed that PU had positive effect on satisfaction while PEOU had indirect effect by passing through PU and attitude. Sahin and Shelley (2008) studied on the satisfaction of distance learning summarized that satisfaction was affected from PU, flexibility of the system and the expertise in computer usage. Rajikumar and Ravindran (2012) carried out study on mobile banking in India revealed that PU and perceived credibility had positive effect toward satisfaction, but PEOU and perceived risk had no significance effect. Kim and Lee (2013) researched on satisfaction of mobile commerce in Korea discovered that PU and PEOU had positive effect toward satisfaction. Mather, Caputi and Jayasuriya (2002) studied on TAM in Australia reported that PU and PEOU had effect toward satisfaction but PEOU had no effect toward PU and with negative effect.

In summary, PU had positive effect toward satisfaction with exception on the study of Hong, Thong and Tam (2006) where effect of PEOU toward satisfaction might have some significance or no significance and may have either positive or negative effect. PEOU either have or not have effect toward PU and might be either positive or negative effect while confirmation had positive effect toward PU, PEOU and satisfaction.

Trust

Trust was a key factor in internet business transactions compared to general business transactions as performance of internet transactions were subject to uncertainty and errors from non-human factors, e.g. lack of privacy from imprudent website that caused the leak of user personal information which led to distrust of the system. This distrust of the system then would generate negative effect toward the intention to reuse internet business transactions and in sharing on these bad experiences with others. Hence, if there were no strict rules and regulations in this business transaction would definitely yield negative effect toward reuse intention. The trustworthiness developed from the initial trial of business transaction and the familiarity and experience with the website would generate trust, i.e. if there was no trial then there would be no familiarity and end up with no trust. The distrust was the key obstacle in doing internet business transactions (Gefen, Karahanna and Straub (2003).

The trustworthiness was the intention to take the risks in receiving the service. It has been indicated that trustworthiness was related to benevolence, integrity, relationship and predictability (Pavlou, 2001). Then the trustworthiness was the factor in building good relationship, lowered the costs and uncertainty in doing business and the uncertainty could be eliminated from the lower of risks.

The trustworthiness related to willing to interact and had very important roles on both the brick and click business. It helps buyer not need to acquaint, understand and monitor the situation. It makes the business transaction easier, lower the cost of website monitoring and decreased the time wastage in details inspection (Pavlou, 2001).

With the lack of trustworthiness, customers would cautiously keep an eye on the website and pay much care of doing business transaction which were great wastage in effort on customers. It could be summarized that the greater the trustworthiness would lead to lower the costs in performing transactions and with less effort (Pavlou, 2001; Chircu, Davis and Kauffman, 2000).

The outcomes of other relevant researches were: Chircu, Davis and Kauffman (2000) who conducted study on the effect of trustworthiness and expertise toward the intention of using e-commerce with PU and PEOU as mediators and business complexity as the moderators, revealed that trustworthiness and expertise were the antecedence of PU and PEOU which aligned with the research outcomes of Pavlou (2001), Wen, Prybutok and Xu (2011) researched on reuse internet business transactions discovered that trustworthiness was effected from PEOU and then through to PU and confirmation had positive effect toward PU and satisfaction. Suki (2011) researched on mobile-commerce in Malaysia concluded that PU had positive effect toward satisfaction and satisfaction had effect toward trustworthiness in turn while PEOU had no significant effect toward satisfaction.

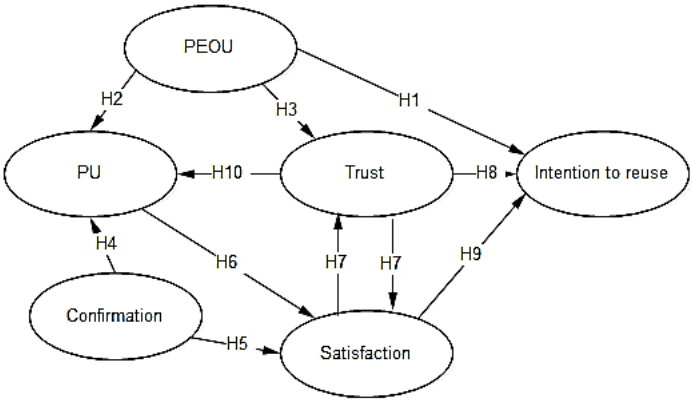
Tang, Tsai and Wu (2005) studied on online purchasing in Taiwan revealed that PU and PEOU had no significant effect toward trustworthiness. Gefen, Karahanna and Straub (2003) stated that trustworthiness was effect from PEOU and then passed on the effect to PU and intention to purchase which aligned with the study of Wen, Prybutok and Xu (2011) with the variation that Wen, Prybutok and Xu revealed PEOU did not necessary to have direct effect toward the intention to purchase.

Santos and Fernandes (2011) conducted study on the effect of customer recovery on website toward the loyalty on website in Brazil, Asad and Shamsabadi (2012) studied on the reuse internet business transactions in Iran while Salehnia, Saki, Eshaghi and Salehnia (2014) studied on the loyalty toward e-banking in Iran, all had similar findings that satisfaction had positive effect toward trustworthiness.

On the contrary, Amini and Akbari (2014) studied the internet purchase in Iran, Chinomona (2013) studied on the brand loyalty in South Africa while Doong, Wang and Shih (2008) studied on loyalty of internet purchase while Jin and Park (2006) studied on the satisfaction and trustworthiness as the mediator integrating various factors on loyalty toward the internet purchase in South Korea, all discovered similar findings that trustworthiness had effect toward satisfaction.

In conclusion, trustworthiness had effect toward PU and PU in turn had effect toward trustworthiness, however there were some studies revealed no significant effect. While the studies on effect of PU and PEOU toward the satisfaction and trustworthiness revealed results in both significant and non-significant effect. It revealed that confirmation affected both PU and satisfaction while satisfaction and trustworthiness had reciprocal relationship.

From above literature reviews, it could be summarized into conceptual framework as per picture and into research hypothesis as follows:



Picture ***5*** *Conceptual Framework*

H1: PEOU had effect toward intention to reuse internet business transaction
H2: PEOU had effect toward PU
H3: PEOU had effect toward trust
H4: Confirmation had effect toward PU
H5: Confirmation had effect toward satisfaction
H6: PU had effect toward satisfaction
H7: Trust and satisfaction had reciprocal effect
H8: Trust had effect toward the reuse internet business transaction
H9: Satisfaction had effect toward the reuse internet business transaction
H10: Trust had effect toward PU.

Materials and Methods

This research was the quantitative research to study the structural effect of various variables as per TAM and other variables integrated with TAM as per ECT theory, i.e. confirmation, satisfaction and others from empirical research, i.e. trust which was formulated into model. 400 questionnaires were disseminated through Facebook to social media internet users and 297 with internet business transaction experiences were selected. The measurement scale divided into 6 sections. PEOU and PU adapted from Davis (1989); Hong, Thong and Tam (2006); Cheng, Lam and Yeung (2006); Wen, Prybutok and Xu (2011); Ho and See-To (2010); Gefen, Karahanna and Straub (2003). Satisfaction scale and intention to reuse scale were adapted from Gefen, Karahanna and Straub (2003) and trust scale was adapted from Cheng, Lam and Yeung (2006); Ho and See-To (2010); Gefen, Karahanna and Straub (2003). These scales were tested for internal consistency by Cronbach's alpha and convergent validity by corrected item-total correlation as in table 4. Reliability analysis

Table 3 Validity of scales

construct	Cronbach's alpha	Corrected item-total correlation
PEOU	0.732	0.480, 0.561, 0.639
PU	0.641	0.476, 0.491, 0.417
Trust	0.731	0.516, 0.574, 0.588
Confirmation	0.756	0.399, 0.744, 0.657
Intention to reuse	0.811	0.512, 0.770, 0.728
Satisfaction	0.644	0.451, 0.597, 0.399

revealed that these scales met minimum alpha requirement of not lower than 0.70 (Nunnally and Berndtein, 1994; George and Mallery, 1995) excepted for PU and satisfaction scale that were slightly lower than 0.70.These will promptly be repeated test again after the actual survey was analyzed through PLS program

by CR, loadings and AVE that were used to illustrate the same contexts. For convergent validity, it revealed the correlation (r_i) between the item score and the corrected total score were within the acceptable range of 0.30-0.70; if r_i lower than 0.30 item i^{th} might not be part of the group and if r_i higher than 0.70 item i^{th} might duplicate some other item (Streiner and Norman, 1991). Kline (1995) recommended the lowest value should be 0.20.

Statistics used in this research were:

1. Descriptive Statistics:

We used percentage to demonstrate the group profile of internet business users, used mean and SD to explain overall understanding of each construct. SD has the lowest value of 0 which indicated that respondents had the same understanding/satisfaction/agreement or other contextual. If SD had higher value, it would indicate that respondents had responded to questions in the deviated manner. The criteria in analyzing how high the value of SD is can be interpreted from coefficient of variation (CV) which was the ratio between SD and average. Acceptable range of CV is 0.25-.050 which indicated that the data have small spread (Singh, Westlake and Feder, 2004).

2. Structural Equation Model Analysis:

PLS Path Modeling details could be summarized as follows:

Given $X = \{X_1, X_2, \ldots, X_H\}$ was an array of indicators (or manifest variables, MV) of exogenous latent variables,

Given $\xi = \{\xi_1, \xi_2, \ldots, \xi_H\}$ was an array of exogenous latent variables (LV),
Given $Y = \{Y_1, Y_2, \ldots, Y_K\}$ was an array of indicators of endogenous latent variables,
Given $\eta = \{\eta_1, \eta_2, \ldots, \eta_K\}$ was an array of endogenous latent variables,
Given $\xi = \{\zeta_1, \zeta_2, \ldots, \zeta_K\}$ was an array of residual,

Structural equation was $\eta = \beta\eta + \Gamma\xi + \zeta$.
Relationship between LV and MV's in reflective context of any block was as follows:

$X_{jh} = \lambda_{xj}\xi_j + \varepsilon_{xj}$; $j = 1, 2, \ldots, H$; $h = 1, 2, \ldots, m_j$ or $\mathbf{X} = \Lambda_x\xi + \varepsilon_x$,
where coefficient λ_j was factor loading of j^{th} LV on h^{th} MV (j^{th} block).
And, $Y_{jh} = \lambda_{xj}\eta_j + \varepsilon_{yj}$; $j = 1, 2, \ldots, K$; $h = 1, 2, \ldots, n_j$ or $\mathbf{Y} = \Lambda_y\eta + \varepsilon_y$.
Regression assumption are $E(\xi_j) = a_j$, $V(\xi_j) = 1$, $E(\eta_j) = b_j$, $V(\eta_j) = 1$, $E(\varepsilon_j) = 0$, $V(\varepsilon_j) = 1$.

Relationship between LV with each MV in formative context of any block was as follows:

$\xi_j = \pi_{xj}X_{jh} + \delta_{\xi j}$; $j = 1, 2, \ldots, H$; $h = 1, 2, \ldots, m_j$ or $\xi = \Pi_x X + \delta_\xi$
$\eta_j = \pi_{yj}Y_{jh} + \delta_{\eta j}$; $j = 1, 2, \ldots, K$; $h = 1, 2, \ldots, n_j$ or $\eta = \Pi_y Y + \delta_y$,

where coefficient π_{yj} was regression coefficient. Other statistics were as follows:

$$1)\ \text{AvCommun}_h = \frac{1}{p}\sum_i^p \left(\text{loading}_{hi}\right)^2 = \frac{\sum \lambda_{hi}^2}{\sum \lambda_{hi}^2 + p - \sum \lambda_{hi}^2} = \frac{\sum \lambda_{hi}^2}{p} = \text{AVE}_h$$

$$2)\ \text{GoF} = \sqrt{\overline{\text{commun}} * \overline{R^2}} \quad \text{where} \quad \overline{R^2} = \frac{1}{J}\sum_j^J R^2(\hat{\xi}_j, \hat{\xi}_q(\xi_q \to \xi_j)$$

$$3)CR = \frac{\left(\sum_{i}^{p}\lambda_{hi}\right)^{2}}{\left(\sum_{i}^{p}\lambda_{hi}\right)^{2} + \sum\left(1-\lambda_{hi}^{2}\right)}$$

4) Redundancy was ability of independent variables in equation $LV_h = f(LV's) + \zeta$ able to explain MV_{hj}, $Redundancy_j = (Communality_j)*R^2_{\hat{Y}_h}$, its average is $AvRedundancy = \frac{1}{p}\sum_{i}^{p} Redundancy_j$.

Path coefficient of not less than 0.20 is said to be high (Chin, 1998).Threshold for CR (composite reliability) and AVE (average variance extracted) are, CR not less than 0.70 (Fornell and Larcker, 1981; Hulland, 1999) and AVE not less than 0.50 (Fornell and Larcker, 1981). AVE was mean square loading of indicators of each block (latent variable, LV) whereas loading was correlations between each indictor and its latent variable. Therefore $(loadings)^2$ indicated how well LV control its own indicators. Hence, the AVE was employed to identify factorial validity. If AVE had the value of not less than 0.50 (or, equivalently, each indicator has been loaded from LV at least 0.707), it would explain that the indicator measure the same LV.

The second implication of AVE was $\sqrt{AVE}$ as the average correlations between indica-tors within the same LV. If $\sqrt{AVE}$ assumed value high than correlations between the target LV and other LV, it would be explained that indicators of target LV was discriminated from indicators of the others, this was discriminant validity. Loadings may assume value greater than or equal to 0.50 (Hair et al., 2001).

The threshold for loading and AVE aim to indicate the factorial validity. Goodness of fit abbreviated as GoF has its value according to average R^2 and average communality. $GoF = \sqrt{\overline{commun} * \overline{R^2}}$. If R equal to 0.14, 0.36 and 0.51, which were considered as low, medium and high respectively (Cohen, 1992), R^2 with the value equal to 0.020, 0.130 and 0.260 were considered as low, medium and high subsequently. Under this consequence, minimum GoF would equal to the square root of product between lowest possible level of AVE at 0.50 and 0.020, 0.130 or 0.260.And hence GoF would assume value of 0.099, 0.255 and 0.361 which considered as low, medium and high fit subsequently. While redundancy had the value equal to 0.010, 0.065 and 0.130 were considered as low, medium and high. Redundancy used to explain how well the antecedents of target LV able to make prediction on value of each indicator of that LV*3*.

3. Non-recursive model analysis with *2*SLS

Let FS_1, FS_2,…, FS_{k-1}, FS_k, FS_m be construct score of LV_1, LV_2, …, LV_{k-1}, LV_k, LV_m in some specific SEM. And let LV_m and LV_k in that SEM has reciprocal relation as $LV_k \rightleftarrows LV_m$. In order to find regression coefficient of LV_k on LV_m, we need to estimate predicted value of LV_m from all predictors other than LV_k using their construct scores, i.e. estimate $\widehat{FS_m} = f(FS_1, FS_2, \dots, FS_{k-1}) + \varepsilon$ and then make a two- stage least square estimation as $\widehat{FS_m} = f(FS_k) + \varepsilon$.

Results

Research findings divided into descriptive analysis and SEM analysis as follows:

Description Statistics revealed that more female than male by 2 times, representing 74 percent of users were those between 24-41 years old, majority of users were business employees and self-employed person (65 percent) and the rest were government officials (25 percent) and other occupation. Distribution of income was almost flat with major group had monthly income between 15,000-35,000 baht.

Table 4 Demographic characteristics of sample

Demographic Characteristics of Sampling		Frequency	Percentage
Gender	female	204	68.00
	male	96	32.00
Age group	19 years or lower	4	1.33
	20 – 24 years	19	6.33
	25 – 29 years	60	20.00
	30 – 34 years	127	42.33
	35 – 39 years	34	11.33
	40 – 44 years	15	5.00
	45 – 49 years	15	5.00
	50 – 54 years	14	4.67
	55 years and over	12	4.00
Current Profession	students	16	5.33
	house wife	7	2.33
	business employee	171	57.00
	government officials	75	25.00
	self-employed	26	8.67
	other	5	1.67
Average Monthly	15,000 Baht or lower	49	16.33
	15,001 – 25,000 Baht	99	33.00
	25,001 – 35,000 Baht	62	20.67
	35,001 – 50,000 Baht	50	16.67
	Over 50,000 Baht	40	13.33

2. Characteristics of latent variables as per research framework revealed that each latent variable had statistics as follows

Table 5 Average, standard deviation and coefficient of variation of indicators

Latent Variables	Mean	SD	CV
Perceived easy to use			
flexible to interact with	4.56	0.56	0.12
easy for me to be skillful at using	4.13	0.67	0.16
usage guide is clear and understandable	4.39	0.59	0.13
Total	4.36	0.61	0.14
Perceived usefulness			
accomplish tasks more quickly	4.19	0.61	0.15
make it easier to do my job	4.07	0.75	0.18
useful to my job	3.40	0.87	0.26
Total	3.89	0.57	0.15
Expectation			
buying through internet better than expected	3.48	0.80	0.23
service quality on internet better than expected	3.45	0.87	0.25
overall, buying through internet as per expectation	3.16	1.01	0.32
Total	3.37	0.74	0.22

Table 5 (Cont.)

Latent Variables	Mean	SD	CV
Satisfaction			
happy when buying through internet	4.07	0.75	0.18
delight when buying through internet	3.48	0.80	0.23
excite when buying through internet	3.21	1.03	0.32
Total	3.73	0.58	0.16
Trust			
feel secure in doing internet transaction	3.63	0.75	0.21
belief high website privacy protection	2.82	0.93	0.33
belief seller's trustworthiness	3.23	0.78	0.24
Total	3.22	0.66	0.20
Intention to reuse			
internet purchase will be your first choice	3.21	1.03	0.32
plan to make internet purchase within next 1 month	3.40	0.95	0.28
plan to make internet purchase within next 3 month	3.37	0.90	0.27
Total	3.33	0.82	0.25

Table 5 revealed that users viewed internet purchasing was very useful, very easy to use and very high satisfaction. However, the expectation, trust and intention to reuse transaction were at medium level by trust had the lowest average among other. It indicated that trust was the obstacle in reuse transaction. SD and CV were very low. CV values under threshold of 0.25-0.50 which indicated that respondents had beliefs, understandings, attitude and intention in similar fasion.

Above statistics help we consider stimulating the reuse of business transaction should be making websites meet the user's expectation and trust, i.e. if internet business satisfies their expectation and protect their privacy it might stimulate the reuse of such transaction.

3. Structural Equation Model Analysis

3.1 Quality of structural equation model measurement:

Outcomes from the structural equation model analysis with PLS-graph 3.0 (Chin, 2001) were exhibited as per Table 6. Table 6 revealed the lowest value of loadings equal to 0.740 while the highest value equal to 0.889 which were higher than the threshold of 0.707and had t-statistics value over 1.96 on all blocks which indicated that indicators were able to reflect the nature of LV's.

The lowest value of residual variance was 0.210 while the highest value was 0.510 which was very low compared to average value. It indicated that the measuring model of $X_{jh} = \lambda_{xj}\xi_j + \varepsilon_{xj}$; j = 1, 2, …, H; h = 1, 2, …, m_j and $Y_{jh} = \lambda_{xj}\eta_j + \varepsilon_{yj}$; j = 1, 2, …, K ; h = 1, 2, …, n_j able to precisely forecast the actual value of indicators. The communality assumed values between 0.487 - 0.790, higher than the criteria. (Cohen, 1992), indicated that the latent variables reflect sufficient information to their indicators.

The redundancy assumed values between 0.175-0.595, also higher than criteria (Cohen, 1992), indicated that antecedents LV's able to forecast the indicators of target LV well. It could be concluded that our measures had high convergent validity.

Table 6 Quality of SEM model and measurement

Latent variable	mean	Loading	t statistics	Residual Variance	Communality	Redundancy
PEOU1	4.56	0.749	23.201	0.439	0.561	0.000
PEOU2	4.13	0.818	25.270	0.332	0.668	0.000
PEOU3	4.39	0.856	48.768	0.267	0.733	0.000
PU1	4.19	0.740	17.567	0.453	0.547	0.237
PU2	4.07	0.809	29.106	0.345	0.655	0.283
PU3	3.4	0.756	19.792	0.428	0.572	0.247
CNFRM1	3.48	0.810	48.387	0.344	0.656	0.000
CNFRM2	3.45	0.838	28.168	0.299	0.702	0.000
CNFRM3	3.16	0.780	27.078	0.391	0.609	0.000
SAT2	4.07	0.698	14.896	0.513	0.487	0.394
SAT3	3.48	0.857	46.968	0.265	0.735	0.595
SAT4	3.21	0.745	24.064	0.446	0.554	0.449
TRST1	3.63	0.806	29.487	0.350	0.650	0.179
TRST2	2.82	0.796	22.067	0.367	0.633	0.175
TRST3	3.23	0.821	29.256	0.326	0.674	0.186
INT1	3.21	0.814	37.266	0.337	0.663	0.303
INT2	3.40	0.889	47.815	0.210	0.790	0.361
INT3	3.37	0.858	35.565	0.263	0.737	0.337

3.2 Quality of Structural Equation Model

Table7 revealed that casual variables of each outcome variable i.e. Intention to reuse = f (PEOU, Trust, Satisfaction) +ζ , Satisfaction = f (Trust, PU, Confirmation) + ξ, Trust = f (PEOU, Satisfaction) + ξ and PU = f (PEOU, Confirmation) + ξ had the following properties able to explain the variation of outcomes.

Table 7 Quality of SEM model in LV level

Latent variable (Block)	Mean	SD	R^2	Average Residual variance	Average Communality	Average Redundancy	Composite reliability (CR)	AVE
PEOU	4.36	0.49	0.000	0.346	0.654	0.000	0.850	0.654
PU	3.89	0.57	0.433	0.409	0.591	0.256	0.813	0.591
Confirmation	3.37	0.74	0.000	0.345	0.656	0.000	0.851	0.656
Satisfaction	3.73	0.58	0.810	0.408	0.592	0.479	0.812	0.592
Trust	3.22	0.66	0.276	0.348	0.653	0.180	0.849	0.652
Intention	3.33	0.82	0.457	0.270	0.730	0.333	0.890	0.730
Average	-	-	0.395	0.304	0.513	0.250	-	-

GoF = 0.450

The average R^2 value equal to 0.395 and individual R^2 higher than maximum criteria (i.e. R^2 = 0.260). Every average residual variance had very low value when compared against average value which indicated that latent variables were able to forecast its own indicator values with high precision.

With AVE value (i.e. average value of communality in block) higher than minimum criteria of 0.50 indicated that latent variables able to control the variation of indicators of its block. These measurements had convergence validity with very high CR value, i.e. between 0.812-0.890 higher than the minimum criteria of 0.60 indicated that each latent variable had high reliability.

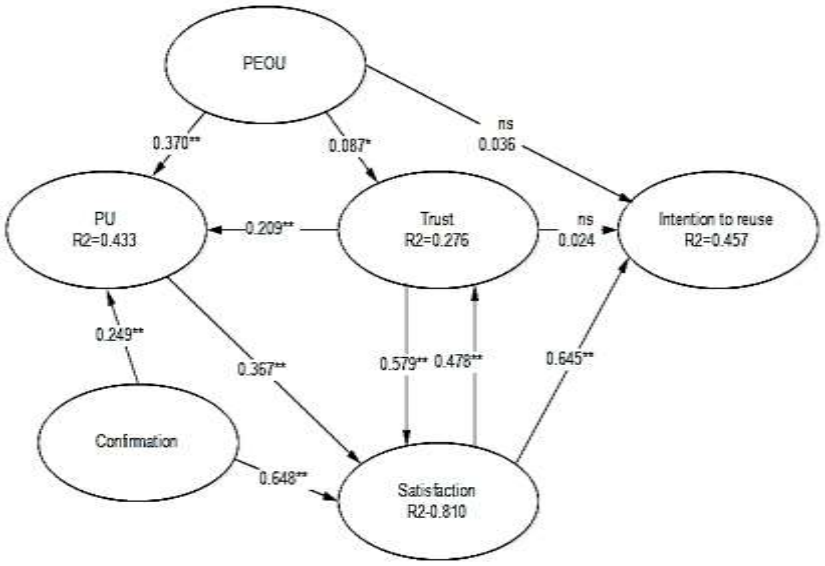
Table 8 Discriminant validity analysis

	PEOU	PU	Confirmation	Satisfaction	Trust	Intention
PEOU	0.809	0.550	0.550	0.550	0.550	0.550
PU	0.550	0.769	0.535	0.535	0.535	0.535
Confirmation	0.462	0.535	0.890	0.845	0.845	0.845
Satisfaction	0.477	0.714	0.845	0.769	0.519	0.519
Trust	0.315	0.462	0.553	0.519	0.807	0.371
Intention	0.351	0.356	0.720	0.675	0.371	0.954

From table 8, figures in diagonal line were $\sqrt{\text{AVE}}$ (i.e.$\sqrt{\text{average communality}}$) had value higher than correlations between such latent variable with other latent variables columnar. This indicated that measurement of each block had no duplication i.e. discriminant validity and model had very high alignment with the empirical data as could be noticed from the higher value than maximum criteria value (criterion value were 0.020, 0.130 and 0.260 for low, medium and high subsequently).

3.3 SEM analysis and hypothesis testing:

The following pictures were the outcomes from the data analysis with PLS-graph 3.0 and 2LS which revealed that



Picture 6 Outcomes of Analysis of Research Model

From above path model, satisfaction left high and significant direct effect toward intention to reuse, not PEOU and trust. When looking at satisfaction and trust, we found that they were highly affected

reciprocally, i.e. trust affected satisfaction and satisfaction affected trust in turn. Satisfaction was highly affected from trust (beta = 0.579**), confirmation (beta = 0.648**) and PU (beta = 0.367**). Trust, in turn, was highly affected from satisfaction (beta = 0.478**) and small but significant from PEOU (0.087*).And, traditionally, PU was rather high affected from PEOU (beta = 0.370**) and confirmation (beta = 0.249**). This study revealed that TAM-Trust-Satisfaction integrated model could be a good possible alternative in explaining intention to reuse in e-purchasing context. Even PEOU and trust did not show significant direct effect toward intention to reuse, However, total effect were acceptable and high (TE = 0.160 and TE = 0.462 respectively).

Table 9 Outcomes of Direct and Indirect Effect Analysis

Endogenous variable	R^2	Effect	antecedent				
			PEOU	PU	Confirmation	Trust	Satisfaction
Intention to reuse	0.457	direct	0.036^{ns}	0.000	0.000	0.024^{ns}	0.645***
		indirect	0.124	0.241	0.636	0.438	0.214
		total	0.160	0.241	0.636	0.462	0.859
Trust	0.276	direct	0.087*	0.000	0.000	N/A	0.478***
		indirect	0.065	0.175	0.353	N/A	0.000
		total	0.152	0.175	0.353	N/A	0.478
Satisfaction	0.810	direct	0.000	0.367***	0.648***	0.579***	N/A
		indirect	0.192	0.000	0.091	0.077	N/A
		total	0.192	0.367	0.739	0.656	N/A
PU	0.433	direct	0.370***	N/A	0.249***	0.209***	N/A
		indirect	0.000	N/A	0.065	0.000	N/A
		total	0.370	N/A	0.314	0.209	N/A

Remark *** meant p-value ≤ 0.01 * meant p-value ≤ 0.10 ns = non-significant N/A = not applicable

Table 9 revealed that antecedent constructs left high and acceptable effect toward the intention to reuse, i.e. satisfaction (TE = 0.859), confirmation (TE = 0.636), trust (TE = 0.462), PU (TE = 0.241) and PEOU (TE = 0.160) consecutively, by the direct effect of PEOU and trust were not significant, but, however left sound indirect effect. It indicated that the buying and selling through internet context, seller must pay more focus on the building of satisfaction, confirmation and trust toward customers over PEOU and PU, since experienced customers understood its application both in ease of use and usefulness in a priori.

On trust, it revealed that trust was affected from satisfaction (TE =0.478), confirmation (TE =0.353), PU (TE =0.175) and PEOU (TE =0.152) in order of priority. On PU, it revealed that PU was moderately high effected PEOU (TE =0.370), confirmation (TE =0.314) and trust (TE =0.209). It was noticeable that importance of satisfaction always stands at first rank, confirmation often ranked as either first or second, trusts as either second and third while PEOU was often the least importance, with the exception of relationship between PEOU and PU. And, empirically, it was shown that confirmation variable was the important integrating factor of TAM and ECT.

The majority of hypothesis tests were in line with past theories and empirical researches as in Table 10.

Table 10 Outcomes of Hypothesis Test

Hypothesis	path coefficient	t-statistics	p-value	Outcomes
PEOU → Intention to reuse	0.036	0.691	0.490	Not supported
PEOU → PU	0.370	6.169	0.000	Supported
PEOU → Trust	0.087	1.734	0.084	Supported
Confirmation → PU	0.249	3.622	0.000	Supported
Confirmation → Satisfaction	0.648	20.039	0.000	Supported
PU → Satisfaction	0.367	11.156	0.000	Supported
Trust → Satisfaction	0.579	12.190	0.000	Supported
Trust → Intention to reuse	0.024	0.507	0.613	Not supported
Satisfaction → Trust	0.478	7.714	0.000	Supported
Satisfaction → Intention to reuse	0.645	15.621	0.000	Supported
Trust → Intention to reuse	0.209	3.258	0.000	Supported

Table 10 revealed that the empirical data on internet purchasing in Thailand supported every hypothesis, with the exception of path *PEOU → Intention to reuse* and *Trust → Intention to reuse* were with low relation-ship and no significant values. It indicated that, subject to this empirical survey, PEOU and trust had no direct effect toward the intention to reuse internet business transaction but very high indirect effect (trust with IE = 0.438) and medium low indirect effect (PEOU with IE = 0.124).

Discussion

In the overall perspectives, our research revealed that internet business users viewed online purchase/ transactions as easy to use and plenty of benefits. Comparatively, satisfaction, confirmation and trust, were ranked high importance factors for variation in intention to reuse while PU and PEOU were medium low. SEM analysis revealed that intention to reuse of online purchase/transactions were affected from satisfaction (TE = 0.859), confirmation (TE = 0.636), trust (TE = 0.462), PU (TE = 0.241) and PEOU (TE = 0.160) respectively. On the analysis of direct effect revealed that only satisfaction left significant direct effect toward the intention to reuse of online purchase/transactions ($\beta = 0.645$, p-value = 0.000), while trust and PU were not statistically significant but left only indirect effect ($\beta = 0.024$, p-value = 0.613 and $\beta = 0.036$, p-value = 0.490 accordingly).

It indicated that on online purchase/ transactions, seller ought to value the importance of satisfaction, confirmation, trust PU and PEOU in order of priority.

In the case of trust and PEOU which not statistically effected on intention to reuse as per TAM, we found from past investigation that they had been explored of not significant in some context, e.g. the study in UAS by Wen, Prybutok and XU (2011) or the study in Germany by Pousttchi and Wiedemann (2007), the study of interaction between behavior and trust in Germany by Berenbruch, Sollner, Leimeister and Schidt (2008), the study on intention to reuse m-Banking in Iran by Abadi, Kabiri and Forghani (2013) and the study of Tang and Chi (2005) in Taiwan which were all discovered that trust left no significant direct effect toward the intention to reuse of online purchase/transaction.

In case of PEOU, the study in Germany by Berenbruch, Sollner, Leimeister and Schidt (2008), the study of TAM in USA by Ghazizahdeh, Peng, Lee and Boyle (2012), the study by Basgoze (2012) in Turkey and the study by Shanab (2013) in Jordan were all revealed that PEOU had no significant direct effect toward the intention to reuse of online purchase/transaction.

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