Factors Affecting Customer's Perceptions Towards Online Banking Transactions in Malaysia

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A model for the customer's intention towards online banking transactions will be developed and empirically investigated in this paper. The theoretical model is tested using a structural equation modeling (SEM) technique. To achieve a more balanced finding among the online banking users in Malaysia, a self-administered questionnaire is designed and a total of 200 valid cases found from five major banks that are part of the customer's behavior towards online banking transactions used. The results show that mutual dependency has the strongest effect on the customer's expectancy variables, and that a customer's trust has a direct effect on intention towards online banking transactions. This paper provides banking service providers with guidelines to improve their organizational performance and ends with recommendations for future study.

Globalization and the growth in new technological developments has spurred a new era of e-commerce (Ibrahim et al., 2013). The term 'online banking' is associated with internet banking or electronic banking which has been appropriately defined as the automated delivery of new and traditional banking products directly to the customers through online and interactive communication channels (Mobarek, 2009). Internet users are rapidly increasing in Asia. In 2012, internet users in Asia had the highest growth rate of 44.8%, followed by Europe with 22.7%,; North America 13%,; Latin America 10.6%; Africa 7%; Middle East 3.3%; and Oceania/Australia 1% (Internet World Statistic, 2012). In Malaysia, at the beginning of 2011, the number of online

banking users had increased to 2.7 million which was a 16% increase in that year. In 2012, the number of Malaysian online banking subscribers had increased to 45% which meant almost half of the Malaysian population had adopted the idea of online banking (Bank Negara Malaysia, 2013; Foon & Fah, 2011). Table 1 illustrates the online banking subscribers in Malaysia from 2005 to 2012, a tacit indication that the number of online subscribers is increasing every year in Malaysia.

Table 1: *Online Banking Subscribers in Malaysia*

Year	Number of Subscribers (Millions)	Penetration to Population (%)
2012	12.4	45.0
2011	11.9	41.6
2010	9.8	34.8
2009	8.1	29.1
2008	6.2	22.5
2007	4.6	16.9
2006	3.2	12.0
2005	2.6	9.8

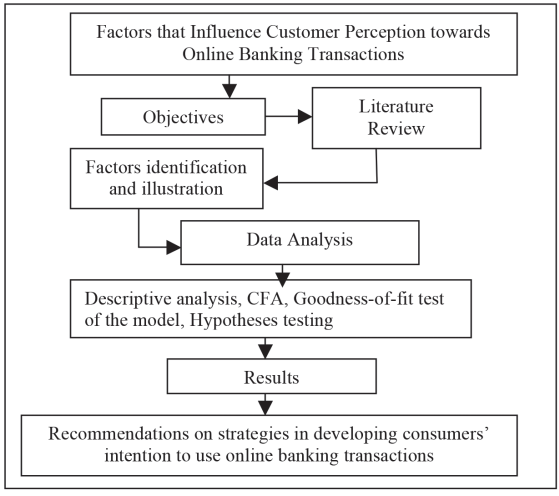
Source: Foon & Fah (2011), Bank Negara Malaysia (2013)

There are twenty-three commercial banks currently listed by Bank Negara Malaysia. *The Daily Sun* reported on November 30, 2011 that the CIMB had been announced as the best online bank in Malaysia because it provided high quality online services and developed its customers' trust through its credible capabilities. Online banking systems facilitate the financial institutions, customers, individuals and businessmen to have ease of access to their accounts, to engage in business transactions as well as to enable the account holders to obtain information on the financial product and services through the intranet and extranet (Singhal & Padhmanabhan, 2008). Many terms have been used to describe the online banking terminology, such as, internet banking, online banking, or PC banking. Apart from that, consumers can engage in online banking by using ATMs, wire transfers, telephone banking, electronic fund transfers and debit cards (Haque et al., 2009).

Because of online banking facilities, customers are able to perform many transactions such as customer service inquiries, transfers of funds from one account to another account, loan applications, opening a new account, and transactions between third party accounts. With the rapid changes and advancement in information technology (Rahman et al., 2014; Talukder, 2011, 2014), online banking has introduced new methods and systems for banking institutions to deliver their services to potential customers (Mobarek, 2009). Hence, it is important for the banks to align their prognostic strategies in response to the changing customer needs with new technological developments. This study was conducted to investigate the Malaysian consumer's perceptions towards online banking. It is also crucially important for the banking institutions to understand their consumer's perceptions towards their online banking system in order to compete in reactive banking marketplace. Security, trust, and website privacy may lead consumers to take a careful but bold approach when using online banking services. The main purpose of the study was to explore the crucial factors that influenced the Malaysian customers' perception towards the online banking

transaction. Oh et al. (2006), Sumanjeet (2009) and Harris, Guru, and Avvari (2011) stated that security, trust and privacy were the most significant factors of the online banking system. Quazi and Talukder (2011) investigated the impact of demographics on the adoption of technological innovation. This study reviewed the Malaysian consumers' perceptions and intention to use online banking transaction literature, and Martin Fishbein's (1968) expectancy value theory was exploited through the source of Palmgreen (1984) that intended to develop a theoretical model and discuss the findings. The methodology part, design procedure, and sample characteristics were described and a measurement model was presented and validated. The survey questionnaires were constructed by using SEM with data analysis results and a discussion preceded the concluding remarks. A structure of the study design is illustrated in Figure 1.

Figure 1: *Structure of the Study*



Literature Review and Theory

Security

The security of banking transaction is the primary concern of the online banking or e-banking system. The lack of convincing security in the online transfer of funds may cumulatively culminate into serious damage to the banking sector. Hence, the ardent hope of most internet banking customers who want financial transaction security is in order to protect their money (Ndubisi & Sinti, 2006; Fatima, 2011). The security of information is the most key component to online banking users (Singhal & Padhmanabhan, 2008). Ragoobur and Ayrga (2011) believed that internet accessibility and security concerns were important elements for the adoption of online banking. Hemandez and Mazzon (2006) showed that relative advantage control, compatibility with lifestyle, image, subjective norm, self-efficacy, relative advantage of security and privacy collectively influenced consumers to use online banking. The users of

online banking systems faced security risks from unauthorized access into their bank accounts. Some users were not fully satisfied with the online transaction because of the remote possibility of unsecured access to accounts which require reliable identification of the sender and the receiver of the online banking transactions. Non-secured online transactions can be misused to disguise as the online banking account owner. Therefore, it is extremely necessary to have a trusted third party who holds the identity certificates of both the sender and the receiver in the online transaction. Srivastava (2007) stated that there were various psychological, egoistical and behavioral issues such as trust, respect and security of the internet transactions, and especially the lack of enthusiasm by the banking sector to change according to the preference for human interface which appeared to obstruct the growth of the internet banking. The study highlighted that a consumer's willingness to use e-banking primarily depended on the security of transactional activities on the internet (Wong et al., 2009). From this perspective, it was suggested that there was an intrinsic need for banks not only to employ mechanisms to build trust for their specific online banking website, but that banks should also confirm the security of the customers in online banking.

Well-planned security can lead consumers to take a more confident approach to e-banking. Hence, a bank needs to diminish a customer's anxiety regarding the safety of its online financial transactions by providing appropriately related information on the reliability of the technology used. Online banking companies stress that they provide safe internal operational controls with a layered security system through the incorporation of advanced banking technology which constantly monitors the online transactional activities via a variety of software packages currently available to meet the situational need wherein the online financial transactions rely on browsers as the front-end software. Saleh (2011) and Berger and Gensler (2007) found that there were three levels of financial transaction security such as encryption standard, firewalls and filtering routers, as well as an internal operating system. An encryption standard provided either a Secure Electronic Transaction (SET) or a Secure Socket Layer (SSL) protocol that assured message reliability (Ndubisi & Sinti, 2006; Fatima, 2011) that allowed the transfer of an appropriate digital signature for authentication procedures and provided confidentiality for the data that flowed between a web server and a browser. Firewalls and filtering routers and internal operating systems provided protection for stored information. As an additional measure of security, customers were assigned a personal identification number and password for accessing their accounts. SSL provided data encryption and message integrity for an internet connection with its ability to provide server authentication for users. SSL security protocol on the web server and customer browser ensured that authenticated data were received from the intended customer. Although SSL was often involved with a strong encryption, the banking company preferred the SET protocol, because it provided the authentication of all financial transaction parties (Berger & Gensler, 2007).

Security is an important aspect that may affect the users' intention to confidently use the online banking transaction systems (Saleh, 2011). Hutchinson and Warren (2003) hypothesized that tight security had a positive effect on the consumers' acceptance of the online banking systems. Central banks devised the standard payment forms and the bank authorities coordinated their efforts to strengthen and upgrade

the systems. The main manifestation of the security of the customers' payments was to create a common understanding of the relevant security against fraudulent transactions (Heikkinen & Iivarinen, 2011). The study by Saleh (2011) highlighted that an electronic banking system could protect the customers' security by applying three techniques: (1) password, (2) encryption, and (3) firewalls or server security. Saleh developed a model that was used by the Radio Frequency Identification (RFID) as a second authentication layer to tighten transaction security. There were five important dimensions interconnected to the online banking transaction activities and the security electronic system was the most important issue that could be installed in a company's computer or built into a website. Security could protect a financial transaction as it has a direct significant impact on the consumer's perception of online banking (Schaupp & Bélanger, 2005). They also stated that there were many types of web security, but the first type of protection on many websites was encryption. Today, most websites use encryption and banks advocate to guarantee the security for the customers by using the firewalls and the encryption technology by which all information (customer's account numbers and account balances) are converted into a series of unrealizable numbers before they are exchanged over the internet. The study by Chuang (2011) and Lee and Turban (2001), stressed that security and privacy had a powerful effect on customers' trust in the online transaction period. According to Saleh (2011), Erikson, Kerem, and Nilsson (2005), and Polatogly and Ekin (2001), security consisted of three dimensions, namely, reliability, safety, and privacy. A good experience of security and privacy on e-banking websites had a positive influence on customers' trust and in general, the level of trust was positively connected to customers' manner and intention in using the internet banking services. Security was recognized as an important determinant of online banking quality (Liao & Cheung, 2002). Security, trust and website privacy were the most significant areas of the online banking system (Oh et al., 2006; Sumanjeet, 2009; Harris et al., 2011), whereas security was the most significant factor influencing a user's perception (Treblmaier et al., 2008; Wai-Ching, Gun-Fie, & Woon-Har, 2009; Changsu et al., 2010). Poon and Tan (2008) pointed out that security factors had exclusively influenced the online banking development. Banks usually included in their online banking contracts, the strict confines of their legal responsibility. Customer protection laws should be determined so that injustice was not surreptitiously enforced. Therefore,

> *H1a: Security has a significant relationship with consumers' trust towards their intention to use online banking transactions*
> *H1b: Security has a direct impact on a customer's intention to use online banking transactions*

Website

Banking websites on the internet usually record transactional information. In these online banking transactions, customers can make their payments for loans and mortgages (Wong et al., 2009). In 1999, most bank websites offered transactional capabilities. Some common services offered were derived such as money transfers, bill payment, checking account balances and histories, etc. (Eze et al., 2011). Nowadays,

many banks attempt to advance their corporate standing with a unique offering of services. Online banking services are different from government, private and trade sources because of differences in terminology and especially, the generic use of the term online banking which specifically refers to a customer's ability to conduct banking on the internet (Talukder, 2011b).

Banking sectors invest in developing their online competencies in the hopes of attracting customers. Slow websites and difficult navigation are the most popular complaints from web users (Chuang & Hu, 2011; Wang & Lin, 2003). Users are generally reluctant to upgrade their connection speed as well (Ryan & Valverde, 2003). Internet delays are likely to remain long before eventually becoming shorter. Internet users want websites they visit to be quick to load and easy to use. Many people log off and never return if a site takes more than eight seconds to load. Goi (2010), Liao et al. (2006) and Vanlwaarden et al. (2004) argued that quality factors determined the website's success and a successful website strategy was acknowledged to be increasingly important to the organizations. User satisfaction with websites directly impacted their choice of sites visited, demonstrating that users were most concerned with information content and ease of use. Kim, Shaw, and Schneider (2003) identified six criteria of website evaluation by integrating the criteria used: 1) business function, 2) corporate credibility, 3) contents reliability, 4) website attractiveness, 5) systematic structure, and 6) navigation. Many elements of design and graphic art can be used to convey content on the web. Elements of space, use of images, size of images, use of animation, audio, number of words per line, color, and size of characters are among just a few of these factors (Rosen & Purinton, 2004). Kenneth et al. (2010) and Balasubramanian, Konana, and Menon (2003) proposed that the virtual attributes of the online banking website created the situational regularity which one uses to create trust in the online environment. Miranda and Banegil (2006) mentioned that the quality of web home pages was determined using an original Web Assessment Index, which focuses on four categories: accessibility, speed, navigability and content. Therefore,

> *H2a: Website had a positive relationship with customer trust towards their intention to use online banking*
> *H2b: Website had a direct relationship with customer intention to use online banking*

Trust

Consumers' trust in e-banking may also bring the success of e-commerce. Trust is very much related to a consumer's behavior with e-banking security (Chong, Keng-Boom, & Boon-In, 2010). Trust can be defined as an individual's belief in the security and privacy of the e-banking system. Furthermore, trust can be defined based on the consumer perception of reliability and security towards an internet banking system (Eriksson et al., 2005). Trust is a crucial and a complex factor in the virtual environment of conducting online banking transactions (Chong et al., 2010). The lack of customer trust can limit the opportunities for implementing web technologies (Hamid et al., 2007) and can be further determined by the perception of confidence and trust on the reliability of the e-banking partners (Hamid et al., 2007). The customer

may not trust internet technology for three reasons: (1) uncertainty of the degree of security, (2) distrust of the service providers; and (3) worry regarding the reliability of internet services (Talukder, Quazi, & Keating, 2014). Trust can be influenced by security, reliability, and the usefulness of the e-banking website. Consumers' attention to trust has a significant relationship with e-banking transactions. However, studies have found these to be truly significant based on the consumers' attention, trust and confidence in the online banking security system (Foon & Fah, 2011). Thus,

> *H3: Trust has a significant impact on customers' intentions to use online banking in a Malaysian context*

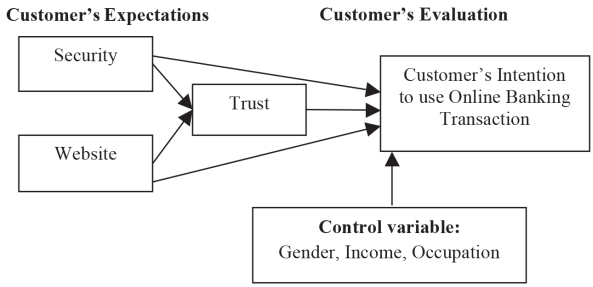
Theoretical Foundation

The theoretical framework for this study was grounded on the convergence theory from a number of fields, specifically philosophical or epistemological perspectives and behavioral or motivational expectancy theories. The role of expectancy theory in the customers' intention to use online banking system, whether implicitly or explicitly articulated, is critical as it deals with the interpretation and transmission of information, construction of meaning and creation of new knowledge, which together may have influenced a customer's intention to use online banking. Behavior is a function of the expectancies. This approach predicts that when more than one behavior is possible, the behavior chosen will be the one with the largest combination of expected success and value. Expectancy value theory holds that people are goal-oriented and the behaviors they perform in response to their beliefs and values are undertaken to achieve some end (Mondi, Woods, & Rafi, 2008). Furthermore, expectancy value theory suggests that people orient themselves with the world according to their expectations or beliefs and evaluations. Utilizing this approach, attitudes and behavioral intention are seen as a function of "expectancy and evaluation that is the degree of affect, positive or negative, towards an attribute or behavioral outcome" (Palmgreen, 1984; UTWENTE, 2013). Expectancy value theory directly relates to use and gratification theory founded by Martin Fishbein in the 1970's (Mondi et al., 2008; UTWENTE, 2013). Communications theory pertinent to this study arose from the perspectives of media uses and gratifications (Mondi et al., 2008). Uses and gratification theory presupposes prior adoption of an innovation and concerns itself with the different user's motivations to continue the use of the technology (Ruggiero, 2000; Stafford, Stafford, & Schkade, 2004; Mondi et al., 2008).

Expectancy value theory links individual needs or expectations with varying goals and levels of satisfaction (Fishbein, 1968). According to expectancy theory, consumers' perception behavior describes a set of beliefs and evaluation that may initiate the Malaysian consumers' intention to use online banking (Mondi et al., 2008). The concept of expectancy value theory maintains that if consumers' beliefs and values in using online banking resources is positive, it is likely that they would continue to use online banking. Conversely, if negative, then consumers would tend to avoid this transaction. Expectancy theory is more concerned with the reasoning antecedents that go into encouragement and the ways in which consumers relate to each other (Miller, 2013). Indeed, expectancy theory is a cognitive process theory of motivation

that is based on the concept that consumers believe there are relationships between expectancy and values and outcome received from customers' perceived behavior and values (Stafford et al., 2004; Lunneburg, 2011). Online banking consumers will be motivated if they believe that expectancy and value can lead to a consumer's desired reward. In this study, factors including website and security had a significant impact on consumers' trust towards the intention to use online banking transactions. Herzberg's two-factor theory arose from the perspective of customers' motivation towards online banking. Figure 2 shows the theoretical research framework adapted from Martin Fishbein's (1970) expectancy value theory through the source of the Palmgreen (1984) that was cited by UTWENTE (2013). In this study, expectancy value theory addresses the Malaysian consumers' intention to use online banking.

Figure 2: *The Conceptual Framework*



Methodology

The main objective of this study was to observe the behavior of customers towards online banking services. To measure the objective, empirical data was used for analyzing and finding the proper results.

Participants, Procedure and Measures

The stratified random sampling technique was used in the study since the population was heterogeneous and was drawn from different types of sectors. A self-administered online questionnaire using this sampling method was employed as the instrument for collecting data between April and June 2013 from a sample of organizational members or staff that were either directly or indirectly involved in the online banking service in Malaysia. These organizations comprised various banking service sectors, insurance companies, and universities (students, lecturers, and administrative staff). In addition, to achieve a more balanced finding among the internet banking users in Malaysia, a total of 450 questionnaires were distributed to online banking customers at 5 major banks in Selangor, Klang Valley, and across the major cities in Johor, Penang, and Ipoh. Contact information for respondents was obtained from official websites, including the banking sectors and other business organizations. The remainder was met mainly through internet websites by using the Google search engine and phone directories.
The unit of analysis of this study was online banking customers and the survey was

mainly addressed to the organizational staff members and customers. The questionnaire was conducted through the Google form and online. The survey link was distributed with a deadline for submission by e-mail, including a cover letter stating the intention of the study and a guarantee to the participants of confidentiality. Then, the questionnaire was sent with an online survey link generated by Google. Filter questions were asked concerning the respondents and how long they had been involved with the online banking services. Potential respondents were not included in the survey if they were not involved in online banking activities. However, a total of 450 questionnaires were distributed and 200 valid responses were received, resulting in a response rate of 44.5%, which is good in light of the allotted time and geographical constraints.

The study examined the influence of security (5 items), website (5 items), trust (3 items), and intention (4 items). Each of the measurement constructs in this study had three to five items, which were measured using a five-point scale ranging from strongly disagree (1) to strongly agree (5). The measurement constructs used in this study were adapted from previous studies. The exogenous variables comprised security (adapted from Szymanski & Hise, 2000; Gommans, Krishnan, & Scheffold, 2001; Boonghee & Donthu, 2001; Schaupp & Bélanger, 2005), website (adapted from Gommans et al., 2001), trust (adapted from Gommans et al., 2001; Loiacono, Watson & Goodhue, 2002; Anderson & Srinivasan, 2003; Schaupp & Bélanger, 2005; Foon & Fah, 2011; Mohan et al., 2013), and the intent to use online banking (adapted from Foon & Fah, 2011; Rahman et al., 2014).

Data Analysis

This study was conducted based on confirmatory factor analysis (CFA), which tested whether a specified set of constructs influenced the responses in a predicted way. The CFA was done using AMOS version 18 to achieve the inter-relationship between the exogenous and endogenous variables of the conceptual model. The CFA was used in this study as it was a multivariate statistical technique (Hair, Bush, & Ortinan, 2006) and the analytical process was applied in the measurement of the linear combinations of constructs. It was also a meaningful arithmetical method used in combining larger sample sizes into a considerably smaller number of factors with a minimum loss of information (Hair et al., 2010). CFA was used to ensure maximal prediction from the set of independent constructs. The weights signified the relative contribution of the exogenous and endogenous variables to the overall prediction. A number of related statistical tests were also applied including convergent validity and reliability, correlation, and hypothesis testing. This study used a structural equation modeling (SEM) technique which estimated the path coefficients and other model parameters in a way that maximized the explained variance or minimized the amount of unexplained variance. In order to test the coefficient for significance of the path modeling, an SEM algorithm was applied. The output from the SEM algorithm also presented the path corresponding to each hypothesis. The difference at a significance level of the p-value for each path was less than 0.05. The convergent validity was determined by loadings greater than 0.70, and the average variance extracted (AVE) should be greater than 0.50 (Hair et al., 1992, 2014). The composite reliability (CR) was generally explained in a similar way as Cronbach's alpha and varied between 0 and 1, in which higher values indicated higher levels of reliability (Hair et al., 2010, 2014).

Justification of SEM

The Structural Equation Modeling (SEM) approach helped to test hypotheses about a relationship among possible and observed variables by estimating a set of individual multiple regression equations (Hair et al., 1998). Mulaik (1994) stated that the SEM was a mathematical model that represented an objective state which could influence other objectives in a more congruent and scientific manner. Furthermore, SEM was the most popular and powerful statistical analysis tool that was specifically developed for analyzing multiple variables in a research model and was available for solving a number of requirements such as interrelationships among variables in a model, Confirmatory Factor Analysis (CFA), analyzing regression with multicollinearity problem, and path analysis with multiple dependents correlation and covariance (Awang, 2012). According to Anderson et al. (1993), SEM helped to test hypotheses about relationships among possible and observed variables by estimating a set of individual multiple regression equations. SEM can be observed in order to predict events (Godfrey & Hill, 1995) and its indicator variable could show unobservable latent variables that were considered as accurate data analysis. The study by Tabackhnick and Fidell (2001) posited that it was a statistical tool which was used in a wide array of directions and disciplines by the marketing researchers over the last two decades. Byne (2006) defined SEM as the statistical methodology that was used in hypothesis testing to the analysis of structural theory. Furthermore, the SEM counted the number of independent variables and ensured how reliable each of the measured variables could be as it made comparisons among the individual models and evaluated between groups (Hair et al, 1998). In this study, SEM was the most appropriate statistical tool to test the models as it included two important characteristics: (1) SEM was used to classify equations for each endogenous construct and allowed researchers to identify multiple dependent relationships that reflected the effect of mediating constructs (Hair et al., 1998), and (2) SEM provided an effective, systematic, and random measurement error (Bagozzi & Philips, 1982). A systematic measurement error was a source of error where all variables were generated by SEM. In this study, a large number of parameters, latent variables and observed indicators were all faithfully estimated by the SEM and the incidence observed of what factors influence customers' intentions to use online banking.

Findings and Discussion

Demographic Information

Descriptive data constitutes an important source of information about employee adoption of innovation in an organizational context. This study elaborated on the illustration of respondents' demographic information in order to identify factors that influenced a customer's intention to use online banking in Malaysia. Demographic information collected from the survey questionnaire provided information on the personnel and organizational characteristics of the respondents. Table 2 presents the summary results of the respondent's demographic characteristics including gender, age, income, occupation, and the recommendation of others for online banking transaction. The proportion of male respondents (64.5%) was higher than female (35.5%). More than 95% of respondents were between the ages of 26 and 40. A large

majority of respondents were administrative staff (61%), followed by academic staff (30.5%), and students (8.5%). A majority of participants (77.5%) recommended others for online banking transactions once they trusted the security of the website. The analysis indicated that the sample was representative of the research population regarding gender and occupation. Such information may prove significant when the adoption and usage level of these respondents are investigated.

Table 2: *Demographic Information About Respondents*

Characteristics	Frequency	Percentage
Gender		
Male	129	64.5
Female	71	35.5
Age		
Below 25 years	11	5.5
26-39 years	115	57.5
40 and above	74	37.0
Income		
Below RM 1,000	20	10.0
RM 1001-RM 2000	52	26.0
RM2001-RM3000	73	36.5
RM3001-RM7500	31	15.5
RM7501-RM10,000	3	1.5
Above RM 10,000	3	1.5
Occupation		
Student	17	8.5
Academic staff	61	30.5
Administrative staff	122	61.0
Recommend for online banking transaction		
Yes	155	77.5
No	45	22.5
Total	**200**	

Confirmatory Factor Analysis (CFA)

Table 3 summarizes results of the measurement model. The item reliability, CR and AVE supported the convergent validity of CFA results. The CR presented the degree to which constructs indicators explained the latent variable, range from 0.894 to 0.924, which was above the cutoff value 0.70. The AVE ranged from 0.647 to 0.740, which was greater than 0.50, justified the use of the construct. The Cronbach's alpha, which was greater than 0.70, indicated the reliability of all measures. The construct with the highest Cronbach's alpha ranged from 0.841 to 0.908, which indicated a good internal consistency of the items in this construct. Overall, these findings indicated that the measurement model had good convergent validity. The internal reliability was achieved through a Cronbach's alpha greater than 0.70 and construct reliability was also achieved through CR. According to Wheaton et al. (1977) cited by Awang (2012), construct reliability should be greater than 0.60.

Table 3: *CFA Result of the Measurement Model and Convergent Validity*

Construct and its item	Factor loading	Cronbach's Alpha	CR	AVE
Security		0.861	0.900	0.647
Latest encryption technology	0.69			
Safeguard	0.71			
Secure communication	0.83			
Updated operating systems	0.90			
Protect my personal information	0.87			
Website		0.841	0.924	0.714
Website is comprehensive	0.72			
Website design	0.88			
Website always updated	0.94			
Quick to load and easy to use	0.96			
Website provides details	0.69			
Trust		0.908	0.894	0.740
Trust affects the demand	0.87			
Maintain privacy	0.75			
Influence Excellent online banking services	0.95			
Consumers' intention to use online banking transaction		0.944	0.915	0.730
My parents, my friends and another third party encourage me to do online banking transaction because they have a positive perception of online banking	0.83			
My perception on online banking is positive because I receive enough information about e-banking service from my bank.	0.77			
I have a positive perception on the online banking service of my bank since I can access it anytime and anywhere.	0.89			
Because of easy access of information on products and services, I perceive online banking services of my bank convenient.	0.92			

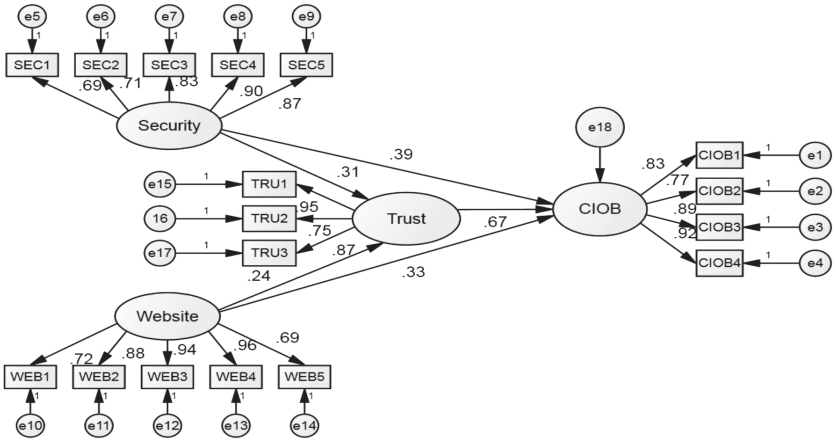
CFA can be used to assess unidimensionality. To estimate the CFA measurement model, maximum likelihood estimation was applied in this study. CFA generally organized the assessment using criteria such as chi-square, root mean square error approximation (RMSEA), comparative fit index (CFI), goodness of fit index (GFI) and adjusted goodness of fit index (AGFI). Content validity depended upon how well the researchers created the measurement items using the relevant literature to cover the content domain of the construct that was measured (Bohrnstedt et al., 1983). Table 4 shows the summarized result of the fit index of the measurement model. The measurement model was assumed to be correct as the probability of normed chi-square was 3.714 which was less than 5, indicating a good fit (Hair et al., 2010). For RMSEA value, which was 0.041, indicating a good fit also, as RMSEA value 0.80 or less recommended a very close fit for the model (Browne & Cudeck, 1993 cited by Awang, 2012). The respective value for the CFI was 0.929, GFI was 0.961, and AGFI was 0.923, which collectively indicated a very good fit for the model. CFI value should be around 0.90 (Bentler, 1990; Kline, 2005). GFI value should be greater than 0.90 (Joreskog & Sorbom, 1984), and 0.95 is considered to a very good fit (Awang, 2012). The AGFI value, which is greater than 0.90, also indicated a good fit (Bollen, 1989;

Awang, 2012), as 0.95 was considered a very good fit for the model (Awang, 2012). Overall, these findings indicated that the measurement model has an overall goodness-of-fit.

Table 4: *Fit Index of the Measurement Model*

Name of Index	Fitness Indexes	Level of acceptance
Normed Chi Square	3.714	X2 ≤ 5
Root mean square error approximation (RMSEA)	0.041	RMSEA < 0.08
Comparative fit index (CFI)	0.929	CFI > 0.90
Goodness of fit index (GFI)	0.961	GFI >0.90
Adjusted goodness of fit index (AGFI)	0.923	AGFI >0.90

Figure 3: *Measurement Model: Degree of Relationship Between Key Factors of Consumers' Perceptions Towards Security, Trust, Website, Consumers' Intention to Use Online Banking (CIOB)*



Hypotheses Testing

The measurement model was used to test the hypothesized relationships among the variables. Table 5 illustrates all the hypothesized relationships in this study. All the paths had a significant relationship at significance level p<0.05. Security and website appeared to have significant effects on trust, supporting H1a (β=0.31, p<0.01) and H2a (β=0.24, p<0.01). In terms of the effect on trust, it had a significant impact on a customer's intention towards online banking, supporting H3 (β=0.67, p<0.01). However, for the direct effects of the security and website on a customer's intention towards online banking, both appeared to have a significant impact, supporting H1b (β=0.39, p<0.01) and H2b (β=0.33, p<0.01).

Table 5: *Standard Estimation of the Main Model*

Relationship				Estimate	S.E.	C.R.	Result
H1a	Trust	<---	Security	0.314	0.061	5.147**	Supported
H2a	Trust	<---	Website	0.244	0.059	3.796**	Supported
H3	CIOB	<---	Trust	0.672	0.098	6.857**	Supported
H1b	CIOB	<---	Security	0.393	0.065	6.046**	Supported
H2b	CIOB	<---	Website	0.337	0.063	5.349**	Supported

**p<0.01, * p<0.05

Control Variable Including Gender, Income and Occupation

Table 6 shows the control variables including gender, income and occupation of the respondents. The role control variables played into the relationship segment of the model. It shows particularly, the roles that monthly income and occupation played in control of the relationship of the model but in terms of gender, the result found that there was no relationship with the model.

Table 6: *Control Variables: Gender, Income and Occupation*

Relationship			Estimate	S.E	C.R	P-value	Relationship
WEB	<---	Gender	0.053	0.067	0.791	0.391	No
TRU	<---	Gender	-0.033	0.042	-0.785	0.226	No
SEC	<---	Gender	0.011	0.083	0.132	0.289	No
CIOBT	<---	Gender	-0.017	0.059	-0.288	0.314	No
SEC	<---	Income	0.298	0.062	4.806	0.01**	Yes
WEB	<---	Income	-0.048	0.057	-0.842	0.542	No
TRU	<---	Income	0.023	0.084	0.273	0.476	No
CIOBT	<---	Income	0.321	0.087	3.689	0.04*	Yes
SEC	<---	Occupation	0.28	0.060	4.666	0.00**	Yes
WEB	<---	Occupation	0.35	0.071	4.929	0.00**	Yes
TRU	<---	Occupation	0.013	0.126	0.103	0.463	No
CIOBT	<---	Occupation	0.22	0.078	2.820	0.05*	Yes

**p<0.01, * p<0.05
WE= Website, SE= Security, TRU= Trust, CIOB= Customers' Intention to Use Online Banking .

Conclusion and Implication

The main finding of this study was that customer trust was the most important variable that significantly and positively affected all other variables. The aim of this research was to examine the perception of Malaysian consumers towards online banking. The results showed that security, trust, and the website itself had a significant relationship with the consumer's perception towards online banking in a Malaysian context. The findings related to customer trust were somewhat inconsistent with prior studies that found a positive impact on customer intentions to use online banking (Chong et al., 2010; Eriksson et al., 2005). However, some studies found no significant relationship between a website and trust but security did have a significant relationship with trust in terms of the use of online banking (Balasubramanian et al., 2003; Eriksson et al., 2005; Kenneth et al. 2010).

The result provided an important implication for organizations. It suggested that organizations should focus their attention on the importance of customers' perceived behavioral intention to use online banking. They should provide customers secure access when making online transactions. The organization should also develop a clear policy on integrating security and website innovation into their business strategy. The policy should pay greater attention to developing website and customer security. Trust in the website and security were the most important component of online banking to customers all over the world. Thus, security, website, and trust played a pivotal role in the decision to use online banking. The government can facilitate this by offering financial assistance and providing infrastructural help for the overall development of online banking implementation.

Limitation and Future Study

The study was confronted with a number of limitations. The survey was conducted with a small sample size in a short time span and a convenient method of data collection. Due to this shortcoming, there is the possibility of an undetected bias subtly playing a role in the outcome. Therefore, a bigger sample size would be necessary to obtain a better result in a future study. This study collected data from a single state of Selangor in Malaysia, yet ignored others such as Trinangun, etc. A future study on the topic should include them in the sample frame so that a general comparison can be made. Another limitation was that this study collected data from one single point in time. Future studies could use a longitudinal approach to capture the changes that would occur in the long-term for the integration of online banking transaction novelty into an organizational setting. However, the results obtained in this study offered some important considerations to the marketing and banking practitioners with regards to the strategic implementation of the online banking services. Nonetheless, this study made a significant step in that direction because it investigated the direct influence on security, trust, and the website which in turn showed relevant relationships with the perceptions towards the online banking services. This study also offered some support for the proposed conceptual research model and an experimental basis for comparison in future studies. In terms of making the findings generalized at the international level, future studies can be based on data collected from other emerging economies in the region such as Singapore, Thailand, and Indonesia.

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Appendix 1: *Survey Instrument*

Security (five items)

- Banking company should provide a latest encryption technology to secure online transaction
- I will not feel secure sending financial information unless bank provide safeguard my account
- I need a secure communication access through online banking website
- I will not feel secure if bank update operating systems
- I will not feel secure if bank protect my personal information

Website (five items)

- The website of my bank is comprehensive
- The design of the website of my bank is attractive
- The website of my bank is always updated
- The website of my bank is convenient and quick to load and easy to use
- My bank's website provides details when bank charges apply

Trust (three items)

- Online banking customer's trust affects the demand
- I trust my bank because my bank maintain privacy for customers
- I trust my bank as it provides excellent online banking services

Online Banking Customer's Perception (four items)

- My parents, my friends and another third party encourage me to do online banking transaction because they have a positive perception of online banking
- My perception on online banking is positive because I receive enough information about e-banking service from my bank.
- I have a positive perception of the online banking service of my bank since I can access it anytime and anywhere.
- Because of easy access of information on products and services, I perceive the online banking services of my bank convenient.

Demographic information

- Gender: ☐ Male ☐ Female
- Age: ☐ Below 25 years old ☐ 26-39 years old ☐ 40 and above
- Occupation: ☐ Student ☐ Academic staff ☐ Administrative staff
- Monthly income: ☐ Below RM 1000 ☐ RM1001-RM2000 ☐ RM2001-RM3000 ☐ RM3001-RM75 ☐ RM7501-RM10,000 ☐ Above RM10, 000
- Would you suggest the e-banking website that you are currently using to your friends and family for their consumption? ☐ Yes ☐ No