

## THE KEY ADOPTION FACTORS OF E-BANKING SERVICE IN MALAYSIA

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### ABSTRACT

*This study explored the key factors that determine the users' adoption momentum of e-banking in Malaysia. Specifically, it aims to focus on the influences of demographic variables and attitude/behaviors towards the attributes possessed by e-banking. Based on present literature on online banking, a questionnaire with 5-points Likert scale was applied to 324 usable responses. Six attributes were examined, namely convenience of usage, features availability, security, design, speed, and fees and charges. Results indicated that all elements for each factor are significant with respect to the users' adoption of e-banking services, except for design factors. It was found that convenience, and securities were the key factors influencing the propensity to adopt e-banking. Security concerns stood out as the main obstacle to the adoption of e-banking. Secondly, demographic background was strongly associated with the adoption of e-banking. The young and middle-adulthood age groups, moderate income and middle class occupation group seemed to be more acceptable to e-banking. However, variables such as gender, race, and marital status appeared to have insignificant influence. The limitations of this study are discussed and suggestions for future research are also put forward. This study only focused on the users of online banking; it did not include the voice of non-users. The results were expected to provide practical contribution in the area of retail banking and in understanding consumer behavior in the chaotic financial services industry. Some of the ways to address the impediments were suggested. This paper was the extension of Suganthi et al.'s (2001) study. They have identified 7 factors, with 17 elements affecting the adoption of Internet banking in Malaysia. Due to time and technology evolving, e-banking in Malaysia has been influenced by a wider set of factors that contribute to the additional insights obtained. In this study, 6 attributes with 42 elements influencing the usage of e-banking gathered from existing literature were examined. The value of the study for financial institutions is that it provides an updated account of banking behavior of Malaysian bank customers.*

**Field of Research:** E-commerce & Technology

**Keywords:** e-banking, factors, adoption, security, Malaysia.

### INTRODUCTION

The term electronic banking often refers to online banking/Internet banking (Karjaluoto, Mattilia and Pento, 2002). In the present study, the term online banking is used in parallel with internet banking or e-banking. E-banking is an innovative service that gives users equal opportunity for easy access to banking activities such as retrieval of account balance, transfers

of money, interest information, as well as reconciliation of accounts. E-banking is a powerful “value added” tool to attract new as well as to retain existing customers. To gain competitive advantage in today’s dynamic environment, banks must therefore meld technology into their relationship building and marketing activities (Moriarty, Kimball and Gay, 1983). With the proliferation of Internet expansion and computers usage, the electronic delivery of banking service has become instrumental for banks to meet customer’s expectations. Computerization in the Malaysian banking industry got off with a slow start and only picked up momentum in the 1970’s (Pang, 1995). Malaysia has started to develop e-banking services since June 2000.

Previous studies examined the issues on the evolution of e-banking (Sohail and Shanmugham, 2003) and analyzed the success factors in multi-channel strategy in the Malaysian banking scenario such as ATMs, telebanking and PC banking (Balachandher, Santha, Norhazlin and Prasad, 2000; Ong and Cheng, 2003). While, Suganthi, Balachandher and Balachandran (2001) have investigated customer preferences for e-banking in Malaysia, and Khong and Richardson (2003) have examined the critical success factors of business process re-engineering as a quality management technique in the Malaysian banks and finance companies. However, the study on customer preferences with wider scope of determinants on e-banking adoption has not been extensively examined in the Malaysian context. Robinson (2000) for instance found that half of the people that have tried online banking services will not become active users. With the population of about 25.6 million in Malaysia today and fast growing number of business entities, it is vital for bankers to comprehend the current trend of e-banking usage. E-commerce and especially online banking is an extremely interesting and important subject since the future global economy depends on e-banking for fast delivery purposes. Hence, a thorough examination of the factors influencing the adoption of e-banking in Malaysia is deliberately essential for bank administrators.

The aim of this study is to obtain current insight into the factors affecting e-banking adoption in Malaysia consumers. This is done by integrating the traditional Technology Acceptance Model (TAM) (Davis, Bagozzi and Warshaw, 1989) to other additional dimensions. These additional factors are the most commonly identified factors from the extant literatures. TAM provides the theoretical foundation for the development of the determinants of this research topic. TAM posits that perceived usefulness and perceived ease of use determine a person’s behaviors. This paper also investigates individual differences in demographic and perceptions. Findings of this study are useful for the banking sector in formulating appropriate strategies to build customer loyalty and customers’ retention. With the advancement of electronic and wireless technology into newer innovations such as WAP, GPRS and 3G, it becomes ever more important for banks to focus their efforts in e-banking systems in order to leverage their business. Attention should be given in this area to understand the factors which motivate consumers to go online shopping, or retail e-shop. The next session begins with a discussion on the factors affecting consumer behavior concerning e-banking and information system acceptance. Next, research methodology is presented; followed by the results and analysis using a factor, regression and correlation analyses. Finally, the conclusion is conferred.

## **LITERATURE REVIEW**

One of the most utilized models in studying information system acceptance is the Technology Acceptance Model (TAM) (Davis *et al.*, 1989). Traditionally, it was perceived that

system use is determined by perceived usefulness and perceived ease of use which relates to intention, which in turn is reflected in behavior. Perceived usefulness refers to the user's belief that the use of a certain application system will enhance her performance, while perceived ease of use is defined as the degree to which the prospective user expects the potential system to be free to effort (Davis *et al.*, 1989). According to Ajzen and Fishbein (1980), TAM is said to base on the theory of reasoned action since it concerns with the intended behaviors, assuming the consumers behave rationally and evaluate systematically given all available information. The use of information system acts as an indicator for information system's acceptance (Pikkarainen, Pikkarainen, Karjaluoto and Pahnla, 2004). Pikkarainen *et al.* (2004) also perceived usefulness was the other main factor influencing online-banking acceptance. Prior research has empirically found positive relationship between perceived ease of use and perceived usefulness as significant critical influential factors on the use of e-banking (Venkatesh and Davis, 1996; Agarwal, Sambamurthy and Stair, 2000; Johnson and Marakas, 2000; Hong, Thong, Wong and Tam, 2001; Chau, 2001; Wang, Wang, Lin and Tang, 2003). Hence, the online-banking application which is perceived to be easier to use than another is more likely to be the accepted online banking. In this study, ease of use is grouped as the "Convenience" factor. It is hypothesized that convenience has positive effects on consumer adoption of e-banking.

Convenience has enabled customers to access e-bank at all time and place as a measure of relative advantage (Devlin, 1995; Ainscough and Lockett, 1996; Elizabeth, 1999; Sathye, 1999; Black, Lockett, Winklhofer and Ennew, 2001; Polatoglu and Ekin, 2001; Suganthi *et al.*, 2001; Howcroft, Hamilton and Hewer, 2002; Gerrard and Cunningham, 2003). Black *et al.* (2001) also claimed that past experience significantly impacted customer's willingness to adopt e-banking. They also found complexity in conducting financial transactions over e-banking was inversely related to an experienced and computer literate consumer. Gerrard and Cunningham (2003) also identified other factors of paramount importance in ensuring the success of e-banking, namely the belief of consumer, customers' confidence on the system, and the ability of an innovation to meet their needs using different features available on the Website. Therefore, it is hypothesized that feature availability has positive effects on consumer adoption of e-banking.

Apart from that, the offer of high quality services to satisfy consumer needs at lower costs is a potential competitive advantage of e-banking. Some studies showed that e-banking has successfully reduced operating and administrative costs (Siriluck and Mark, 2003; Devlin, 1995; Ong and Cheng, 2003). Cost savings have helped e-based banks offer lower or no service fees, and offer higher interest rates on interest-bearing account than traditional banks (Gerlach, 2000; Jun and Cai, 2001). Technologies should be reasonably priced relative to its alternatives; otherwise the acceptance of the new technology may not be viable from the standpoint of the consumers. It is hypothesized that fees and charges has a negative impact on adoption of e-banking.

On the other hand, quality designs, graphics or colors and portrayal of good image of the bank would enhance efficient use of navigation. Design was found to influence user satisfaction (Jayawardhena and Foley, 2000). Besides, Hoffman and Novak (1996) found that there was a significant correlation between download speed and user satisfaction. Speed of download depends on the nature of the site downloaded the computing hardware and method of

connection used to download information (Jayawardhena and Foley, 2000). Thus, it is hypothesized that design and speed have positive effects on consumer acceptance of e-banking.

Customers frequently do not trust Internet technology for three main reasons: security of the system, distrust of service providers, and worries about the reliability of Internet services (Rotchanakitumnuai and Speece, 2003; Lee and Turban, 2001; Min and Galle, 1999; Sathye, 1999; Howcroft *et al.*, 2002). Security is an important dimension that may affect users' intention to adopt e-based transaction systems. This is called "perceived credibility" in Wang *et al.*'s study (2003). Security refers to the protection of information from unsanctioned intrusions or outflows. Security is a frequently cited obstacle (Jun and Cai, 2001; Polatoglu and Ekin, 2001; Gerrard and Cunningham, 2003; Goldfinger, 2001). The breach of security poses tremendous threats to the success of the e-banks. Customers fear that personal information divulged on e-banking sites might be misused by others over the Internet. Consumers also fear over the security of financial transactions made over the Internet (Sathye, 1999; Aladwani, 2001; Black *et al.*, 2001). This has been proven by Ho and Ng's study (1994) that there was a low adoption rate of Electronic Payment System (EPS) since consumers perceived that it is riskier than other traditional payment methods, and thus fail to substitute for cash and credit card payment. There is a need to upgrade the banks' security system and reputation. For e-banks, reputation is one of the major factors that affect customer adoption of technology-based service delivery (Mols, 1999; Aladwani, 2001). Three concerns about legal support prominent among respondents were the ability of the courts to resolve e-banking disputes efficiently, and fair liability for bank customers in responsibility for any financial mistakes (Rotchanakitumnuai and Speece, 2003). Hence, improvement of perceived credibility is crucial in order to gain users' confidence and trust. It is posited that security has positive effects on consumer acceptance of online banking.

Apart from that, it has been widely recognized that demographic factors have a great impact on consumer attitudes regarding online services (Sathye, 1999; Jayawardhena and Foley, 2000; Mattilia, M., Karjaluoto, H., and Pentto, T., 2003; Poon, Low and Yong, 2004; Wan, Luk and Chow, 2005). In the area of e-banking specifically, Singh (2004) and Akinci, Aksoy and Atilgan (2004) have revealed that more males used internet banking than females in South Africa and Turkey respectively. Jarvenpaa and Todd (1997) and Harrison and Rainer (1992) claimed that there was a strong negative relationship between age and the acceptance of new technologies. Apart from that, younger, educated, wealthy (Sathye, 1999; Lassar, Manolis and Lassar, 2005) and higher income level consumers (Lassar *et al.*, 2005; Im, Bayus and Mason, 2003) were most likely to adopt e-banking. Specifically, some even found that upper middle class or in parts as a member of the career-oriented upper middle class were most likely to adopt e-banking (Roemer and Buhl, 1996), while Akinci *et al.* (2004) found that mid-aged consumers were more likely than younger or older consumers to use internet banking. Prior experience of computers was also an essential factor underlying attitude (Arndt, Clavenger and Meiskey, 1985; Igbaria, Livari and Maragahh, 1995; Poon *et al.*, 2004). An extremely high correlation was found between prior computer experience and computer attitude as indicated in Levin and Gordon (1989) and Karjaluoto *et al.* (2002). Therefore, demographic characteristics were tested to distinct e-banking acceptance level to see if the general beliefs of the younger, more educated, more affluent of the population, or high-level occupations are more likely to adopt e-banking. The hypotheses proposed that household income level; education level will

be positively related to e-banking adoption, while age level will be negatively related to e-banking adoption. In addition to TAM literature that included age, education, occupation and household income as independent variables in the analysis, other dimensions that might influence adoption, such as gender, race, marital status, prior experience (computer literacy) and internet accessibility were also included to see broader dimensions.

## **METHODOLOGY**

### **Sampling Procedure**

Anonymous questionnaires were randomly administered to a total of 500 respondents. The response rate was 71.8 percent (359). Among these, 324 (64.8%) of the responses were usable as most items were adequately responded. To assure randomness, every 5<sup>th</sup> customer that visited commercial banks to deal with any transactions was selected. The questionnaire was administered face to face; as such the response rate was satisfactorily high.

### **The Instrument**

The items used in the questionnaire were constructed on the basis of the extant literature. Screening questions would be asked to assure that the respondents had used online banking services before. This assured their perceptions were based on actual experience. The questionnaire was only administered to respondents who answered confirmative to screening questions since the refusal to answer the survey on the part of the respondents increase the degree of error in the data collection stage (Aaker, Kumar and Day, 1998). The questionnaire comprises of two sections. Section 1 comprised questions on demographic characteristics and section 2 consisted of questions assessing the factors affecting the adoption of e-banking services. Respondents were asked to indicate their levels of agreement based on the 5-point Likert scale from "1" (strongly disagree) to "4" (strongly agree). A confirmatory factor analysis with orthogonal VARIMAX rotation was conducted using principal axis factoring with varimax rotation as an extraction method (Hair, Anderson, Tatham and Black, 1998). A factor analysis allows a grouping of 78 attributes variables to identify the underlying factors that explain the variance of the attributes. VARIMAX method maximized the sum of variances of required loading of the factor matrix.

### **Identification of Factors**

From the VARIMAX rotated factor matrix, it was hypothesized that in building the adoption of an e-banking service, six factors were identified as the factors representing 58.97 percent of the explained variance. They were convenience, feature availability, security, design, speed, and fees and charges. A total of 74 variables were loaded significantly. All factors whose factor loading greater than 0.50, and Eigenvalue greater than 1 were retained in the factor solution (Lewis, 1984). The variables with higher loadings signaled the correlation of the variables with the factors on which they were loaded (Kaiser, 1974). To assess the internal reliability of the factor identified, a Kaiser-Meyer-Olkin (KMO) index was used. Kaiser characterizes the measure in the 0.9's as marvelous, in the 0.8's as meritorious, in the 0.7's as middling, 0.6's as mediocre, in the 0.5's as miserable and below 0.5's as unacceptable (Kaiser, 1974). Results showed a KMO of 0.766 that indicated medium measure of sampling adequacy.

## **FINDINGS**

### **Demographics of the Sample**

A total of 52.2 percent were male respondents. A majority of the respondent (29.9%) were in the range of 26-35 years of age (middle adulthood), while 54.3 percent were single, 31.8 percent were married, and 41.7 percent and 39.5 percent were Malay and Chinese respectively. The survey showed that majority have obtained a degree, with 46.6 percent of the respondents being degree holders, 26.9 percent were diploma holders, and 22.2 percent were postgraduate. 18.8 percent of the respondents were involved in manufacturing industry, 16.4 percent were sale, marketing, advertising and customer service workers, about 12 percent were information communications technology related workers and professionals, and a minority (4.3%) were managers, CEOs or CFOs. Slightly more than half the respondents (51.6%) were earning a monthly income of less than RM3,000. A majority (77.1%) of the respondents were able to access the Internet at home or at the workplace. More than three-quarter (78.7%) of the respondents were computer literate and had previous experience in surfing the Internet. Only minority was techno-phobic and might simply be reluctant to change. Only 1.5 percent of the respondents have no cell phone, and about 10.5 percent have WAP, GPRS or 3G features on their cell phone that entitle them to go online conveniently. Our sample has a higher proportion of younger, more educated, moderate income earners. Nevertheless, this over-representation might not be undesirable because people with such characteristics form a “major customer segment for banking institutions” (Akinci *et al.*, 2004:223). The detail information was depicted in Table I.

ANOVA test was carried to test if demographic variables influence the usage of e-banking. Results indicated that the younger generation was relatively more computer literate and more likely to adopt e-banking services. Those with a higher average level of monthly income appeared to be significant affluent users. This was not uncommon since they were more often the trend setters and more educated. It was also noteworthy that those who possessed hand phones with special features were not significantly influenced to adopt e-banking. It might be due to the high price of subscribing to the relatively new 3G or GPRS features as only about 10 percent of the respondents had access to those high end features.

### **Discussion of Factor Analysis**

Table II showed the results of the factor analysis. Results revealed the attributes loaded on each factor, the factor name, factor loadings, Eigen values, the variance explained by each factor, factor mean and the KMO value. All factor loadings are significant. A reliability analysis was also carried out to check the underlying dimension for the success factors generated through factor analysis. Table II depicted a summary of the beta scores of all the response ranking of the factors that affect the adoption of e-banking in Malaysia. Among the factors, security has the highest ranking with a mean of 3.124 and a standard deviation of 0.3117. The design factor has the lowest ranking with a mean of 2.371. All factors displayed a Cronbach's alpha coefficient of at least 0.71, indicating the questionnaire (n = 324) had attained a rather high level of relevance for virtual banking in general. Hence, all variables were retained. Having established the characteristics relevant to the adoption of e-banking, the hypothesis can be created. Generally,

**Table I**  
**Demographic Profile and Relationship between Demographic Variables and e-banking Adoption**

<i>Demographic Variable</i>	<i>Frequency</i>	<i>Per cent</i>	<i>F-value</i>	<i>Significance</i>
<b>Gender</b>			5.210	0.482
Male	169	52.2		
Female	155	47.8		
<b>Age</b>			9.871	0.020*
below 25	91	28.1		
26-35	97	29.9		
36-45	62	19.1		
46 and above	74	22.8		
<b>Race</b>			4.016	0.605
Chinese	128	39.5		
Malay	135	41.7		
Indian	41	12.7		
Others	20	6.2		
<b>Marital Status</b>			5.684	0.063
Single	176	54.3		
Married	103	31.8		
Divorced	26	8.0		
Widow	19	5.9		
<b>Education Level</b>			11.341	0.017*
Primary	2	0.6		
Secondary	12	3.7		
Diploma	87	26.9		
Degree	151	46.6		
Postgraduate	72	22.2		
<b>Occupation</b>			6.463	0.05*
Computer related	40	12.3		
Manager/CEO/CFO	14	4.3		
General administrative/Supervisory	36	11.1		
Government/Military	24	7.4		
Manufacturing/Production/Operations/Industry	61	18.8		
Professional	39	12.0		
Sales/Marketing/Advertising/Customer Service	53	16.4		
Retired	16	4.9		
Student	18	5.6		
Others	23	7.1		
<b>Income Level (monthly)</b>			10.187	0.049*
Less than RM1,499	55	17.0		
RM1,500-RM2,999	112	34.6		
RM3,000-RM4,599	96	29.6		
RM4,600 and above	61	18.8		
<b>Computer Literacy</b>			12.412	0.044*
Yes	255	78.7		
No	69	21.3		
<b>Internet Accessibility at Home/Office</b>			10.349	0.039*
Yes	250	77.1		
No	74	22.9		
<b>Hand Phone Feature</b>			4.822	0.089
WAP	20	6.2		
GPRS	9	2.8		
3G	5	1.5		

Note: \*denotes significance at  $p < 0.05$

there is a positive relationship between adoption and the various characteristics of convenience, feature, confidentiality, speed, design, and management, except for those items related to fees and charges. In sum, the results appear to demonstrate satisfactory levels of reliability. The details of orthogonal factors are as follow:

**Table II**  
**Factor Analysis and Cronbach's Alpha Coefficient**

<i>E-banking Factor<sup>a</sup></i>	<i>Factor Loading</i>	<i>Eigen Value</i>	<i>Variance (%)<sup>b</sup></i>	<i>Factor mean</i>	<i>Cronbach's <math>\alpha</math> coefficient</i>
<b>Factor 1 (Convenience)</b>		8.7	19.82	2.928	0.9761
I can access anytime & anywhere.	0.885				
No queue.	0.877				
Save time as compared to conventional banking.	0.879				
E-banks transaction is easy to use.	0.864				
User friendly.	0.800				
Easy login.	0.802				
Account access when abroad.	0.835				
I check my transaction details and statement regularly.	0.712				
I think computer literate keeps me using e-banking services.	0.726				
<b>Factor 2 (Feature availability)</b>		1.73	3.69	2.403	0.8779
Easy access of information on products and services.	0.801				
Satisfy with the diversity of services.	0.675				
Print account statement.	0.996				
Transfer payment for public utilities.	0.650				
Continuous improvement on banking services.	0.617				
Change user id and password.	0.772				
Inquiry about outstanding balance.	0.701				
Inquiry about credit card and ATM card.	0.340				
<b>Factor 3 (Security)</b>		10.63	25.71	3.124	0.9856
The authorized username and password are important.	0.729				
I do not save my login number and password on the computer.	0.890				
I do not leave my computer unattended, while connected to the e-banking services.	0.926				
Trust affects the demand for e-banking services	0.955				
Pins obtain by fraud may allow hackers to access to customers' account.	0.917				
I don't mind register before supplying information	0.809				
Banks' reliability in correcting erroneous transactions.	0.664				
Trust the bank will compensate for losses due to security reasons.	0.899				
I am satisfy with the security system	0.387				
<b>Factor 4 (Design)</b>		1.01	2.38	2.371	0.7120
Attractiveness screen layout and design.	0.680				
Site has flashy graphics and color configuration.	0.644				
Web site design is important.	0.535				
<b>Factor 5 (Speed)</b>		1.43	3.627	2.925	0.8719
Frequent connection breakdown.	0.645				
Easy to navigate the bank site due to smooth speed.	0.433				
Transition is efficient/no waiting time.	0.376				
Response speed to complaint is satisfactory.	0.768				

table 2 contd.

<i>E-banking Factor<sup>a</sup></i>	<i>Factor Loading</i>	<i>Eigen Value</i>	<i>Variance (%)<sup>b</sup></i>	<i>Factor mean</i>	<i>Cronbach's α coefficient</i>
Speed of e-transactions flow is faster than traditional banking channels.	0.660				
<b>Factor 6 (Fees and charges)</b>		1.96	3.744	2.521	0.7954
Prices of computer are reasonable and affordable.	0.724				
Fee of Internet connection is affordable.	0.881				
E-banks charge lower transaction fees.	0.346				
Price of service fees is acceptable.	0.447				
E-banks charge annual fee.	0.201				
I won't terminate services even if bank charges annual fee.	0.586				
Time saving using e-banking services.	0.889				
Continue using although need to pay low subscription fees.	0.772				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.766		80.4		

Notes: <sup>a</sup>42 e-banking attributes captured in six factors

<sup>b</sup>58.97 percent of cumulative variance explained

<sup>c</sup>Mean scale: using a four-point Likert scale 1= strongly agree; 4= strongly disagree

Factor 1 (Convenience) contained nine items and explained 9.82 percent of the variance in the data with an Eigenvalue of 8.7 (Alpha = 0.976). While, factor 2 (Feature availability) with a loading of eight items, accounted for 3.69 percent of the variance with an Eigenvalue of 1.73 (Alpha = 0.877). Factor 3 (Security) contained nine items, which accounted for 25.71 percent of the variance with an Eigenvalue of 10.63 (Alpha = 0.985). Meanwhile, factor 4 (Design) loaded with three items, accounted for 2.38 percent of the variance with an Eigenvalue of 1.01 (Alpha = 0.71). Factor 5 (Speed) explained 3.62 percent of the variance with an Eigenvalue of 1.43 (Alpha = 0.871). Finally, factor 6 (Fee and charge) exhibits loadings for eight variables with alpha of 0.795. The security factor explained most of the total variance.

The relationship between the adoption and the independent variables of the six orthogonal factors were then entered into a regression analysis. The regression analysis was conducted to reveal how different factors affect the use of online banking. Results in Table III showed factors listed in the order of importance base on beta coefficients that explained relative impact of the six factors on the variance of adoption levels. The correlation coefficient (R) of 0.712 indicated that the six factors explained 71.2% of the variance of e-banking adoption. Hence, the regression model was said to have achieved goodness-of-fit in predicting the variance of customers' overall adoption in relation to the ten factors. The derived factor scores generated for the factors were used as independent variables. Of the six factors, Factor 1 (Convenience) carried the heaviest weight in explaining users' overall adoption level, with beta = 0.403 indicated that a one-unit increase in satisfaction with convenient factor would lead to 40.3 percent increase in customers' adoption of e-banking facilities, *ceteris paribus*. This was followed by security factor (with beta = 0.395), feature availability (beta = 0.211), fees and charges (beta = 0.186) and speed (beta = 0.128). Design factor, however, has no statistical significance in influencing the adoption of e-banking services in Malaysia. In sum, results showed that all the five factors were pertinent factors that significantly affect the adoption of e-banking at  $p < 0.05$ , except for design factor which is of no significance. Thus, lack of those attributes were the main causes of customer's dissatisfaction. It is noteworthy that security factor, besides convenience factor appeared to be the most significant attribute influencing the adoption of e-banking.

**Table III**  
**Regression Analysis**

<i>Goodness-of-fit:</i>	<i>Multiple R</i>	<i>R square</i>	<i>Adjusted R square</i>	<i>Standard error</i>	
	0.713	0.508	0.498	0.3915	
<i>Analysis of variance</i>	<i>DF</i>	<i>Sum of Square</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
Regression	6	50.17	8.362	54.54	0.000
Residual	317	48.59	0.153		
<i>Variables in the equation</i>					
<i>Independent variables</i>	<i>Coefficient</i>	<i>Standard Error of coefficient</i>	<i>Standardized regression coefficient (Beta)</i>	<i>t value</i>	<i>Sig.</i>
Convenience	0.403	0.058	0.406	6.948	0.000
Security	0.395	0.057	0.392	6.929	0.000
Feature availability	0.211	0.059	0.226	3.576	0.001
Fees and charges	0.186	0.147	0.193	1.263	0.511
Speed	0.128	0.058	0.133	2.206	0.042
Design	0.001	0.072	0.004	0.013	0.672

*Note:* *Dependent variable:* degree of overall acceptance of online banking facilities

*Independent variables:* ten orthogonal factors representing the components of perceived determinants of e-banking acceptance

### Correlation between Online Banking Adoption and Selected Factors

In this paper, a Pearson correlation analysis was run to test the hypothesis. The results of correlation of all factors and demographic variables with the adoption of online banking were depicted in Table IV. Results indicated that relatively high correlations were found between online banking adoption, the factors and demography. Computer literacy was found to have the highest correlation with overall adoption, which was consistent with previous studies, for example, Levin and Gordon (1989). Obviously, computer literacy/prior computer experience was a major factor underlying adoption behavior. Besides computer literacy, online banking adoption was found positively correlated with internet accessibility at home, education, occupation, and income level at 5 percent level. Meanwhile, adoption was found negatively correlated with age. This implies that the adoption was highest among the middle adulthood (26-35), followed by early adulthood

**Table IV**  
**Correlation Analysis**

<i>Factors</i>	<i>Pearson correlation</i>	<i>Demographics</i>	<i>Pearson correlation</i>
Convenience	0.31**	Gender	-0.19
Security	0.47**	Age	-0.36**
Feature availability	0.25**	Race	0.02
Fees and charges	-0.31	Marital status	-0.14
Speed	0.39**	Education level	0.34**
Design	0.01	Occupation	0.51**
		Income level	0.60**
		Computer literacy	0.67**
		Internet accessibility at home	0.62**

*Note:* \*\* denotes significant at  $p < 0.05$

(below 25). In sum, of the demographic variables, middle-adulthood and young age, higher educated, moderate income and occupation group were found to be important variables affecting online banking adoption. Meanwhile, marital status, race and gender were insignificant factors. Gender factor was insignificant probably due to the fact that the gap was shrinking. This indicated that male-dominated e-banking was not significant here.

## **CONCLUSION**

The primary objective of the study was to study consumer adoption of online banking in Malaysia in the light of the Technology Acceptance Model (TAM) added to other variables derived from online banking adoption literature. With the use of factor analysis, six factors were identified namely, convenience, feature availability, security, design, speed, and fees and charges that demonstrate an impact on the adoption of online banking. The results of regression analysis conducted on the six factors indicated that security was the major influential factor toward the use of online banking services, followed by the convenience factor. However, under the present conditions of distrust, banks need to further visibly dissipate concerns for security and reliability with concrete solutions to improve trustworthiness of systems. Meanwhile, convenience, feature availability, speed, and (fees and charges) were important factors and have positive (negative) correlation with the adoption of e-banking in Malaysia. As far as the demographic factors were concerned, the more computer knowledge the customers have, the higher the possibility of them becoming new users of online banking. The young and middle-adulthood, moderate income and middle class occupation groups seemed more acceptable to e-banking. However, variables such as gender, race, and marital status appeared to be not significant. Banks should not neglect the older-aged group that prefers consumer-centric policies. For them, time and effort spent to learn new channels is too large to offset the time cost of making a trip to the bank. Moreover, online banking has no social dimensions as compared to a face-to-face situation, thus this is an obstacle refraining the acceptance of e-banking (Mattilia *et al.*, 2003). Recognizing that demographic factor influences customer intentions, software developers should pay attention to market segmentation, improve web site designs and strengthen website security; specifically focus on those less educated, lower income group, and old aged group, probably considering the availability of different local dialects on the Website since Malaysia is a multi-racial country that has different dialects. This study only focused on the users of online banking, it did not include the voice of non-users. Therefore, after having a better understanding of the relationship between e-banking and users, future research may address aspects of marketing strategy and promotional and communication issues in order to acquire new users as well as to effectively maintain existing customers.

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