Continuous Adoption of Internet Banking: Evidence from Islamic Banks in Malaysia

Hassanudin Mohd Thas Thaker[1*], Mohamed Asmy Mohd Thas Thaker[2], Ahmad Khaliq[3], Anwar Allah Pitchay[4] & Hafezali Iqbal Hussain[5]
[1]Sunway University, Malaysia
[2, 3] International Islamic University Malaysia
[4]Universiti Sains Malaysia
[5]Taylor's University, Malaysia
Corresponding author[1*]: hassanudint@sunway.edu.my

Manuscript to the 10th Foundation of Islamic Finance Conference
"Advanced Research in Islamic Finance"

28th November 2019

Sunway University, Malaysia

Abstract
Drawing on UTAUT2 framework, this study aims to investigate the behavioural intention and adoption of internet banking (IB) among clients of local and foreign Islamic banks in Malaysia, using Partial Least Squares analysis. Survey questionnaires were distributed among the Islamic bank's clients at two main places (i) Klang Valley and (ii) Selangor and primary data was collected from 319 clients. The SmartPLS analysis yielded three main outcomes: 1) the variables such as performance expectancy, effort expectancy, price value, facilitating conditions and habit have a positive influence over the behavioural intention and subsequently lead to the adoption of IB. The other two variables, namely social influence and hedonic motivation were negatively related and insignificant for behavioural intention. Thirdly, we also noticed that facilitating conditions and habit have a direct relationship with the adoption of IB. The implications of these outcomes are discussed from theoretical and practical perspectives.

Keywords: Internet Banking, Behavioural Intention, Adoption, Islamic Banking.

1.0 Introduction

Today, most of the banks noticed the significant importance of technologies and started to incorporated technology in many dimension involving banking activities. As reported by Institute of Demand (2017), technologies involving banking activities such as internet banking, mobile banking, and other type of cashless system, expected to surplus over US$10tn over the next decade. This smart technology significantly disrupted the entire system of banking activity in a positive outcome as well as other industries such as money transfers, fundraising and asset management. According to Ernst and Young (2016), banking industry generally all over the world have invested heavily in digital environment and this subsequently leads to alteration of their operation side. In par with conventional banking, Islamic banking is also not exceptional in adapting technology to provide easy service to their client. One of the rapid progression of technology among Islamic banks is offering their services via internet banking (IB). Broadly speaking, the usage of technology in Islamic banking worldwide shows tremendous development such as UAE recorded 34 per cent development in internet banking usage followed by Kuwait (27 per cent), Qatar (19 per cent) and Saudi Arabia (15 per cent). Furthermore, every year, several Gulf countries allocated about US$5m to US$20m for digital development purposes (Earnst and Young, 2016).

The advancement of digital banking in Islamic banks has also impacted other Muslim countries as well such as emerging countries like Malaysia. As addressed by Malaysia Prime Minister, Tun Dr Mahathir Mohamad in his recent keynote speech at Kuala Lumpur Islamic Finance Forum (KLIFF, 2019), Fintech has contributed positively to the evolution of Islamic banking products and services offering. In Malaysia, the development pace of Islamic banking industry has deepened in recent years where the Islamic finance and banking concepts are merged with various financial products in order to fits with consumers, businesses and investors. Obviously, the development of Islamic banking and finance is supported by various factors such as well-developed regulatory, prudential, accounting, framework and most recent is financial technology (fintech).

Statistically speaking, Central Bank of Malaysia statistics shows that the number of internet banking usage has increased steadily for both banks (Conventional and Islamic banks) with a registered number of subscription close to 10 million. Malaysia is considered as one of the advanced Muslim countries in developing the markets of Islamic banking, after considering its existence for more than 30 years. The growth of Islamic banking expected to increase beyond 20 per cent in the next two years with a total value of US$3.5tn in total assets. In terms numbers, there are 11 local and 5 foreign fully-fledged Islamic banks in Malaysia followed by 12 takaful providers and six financial institutions that of Islamic banking products (Thaker et al., 2017). Following that, Malaysia was ranked third after Saudi Arabia and Iran with a total asset size of US$414,343m and these three countries holding about 65% of total asset size of Islamic banking worldwide.

Therefore, it is very important for Islamic banking to maintain its competitive edge in terms of development and growth with its counterpart given the intensified market. We choose Interne banking as an element of key competitive edge for Islamic banks. One way to survive in the digital market is by enhancing their current stand-in Internet banking. Most of the Malaysian Islamic banks have adopted internet banking to provide efficient services to their clients. The Central Bank of Malaysia reported that subscribers of internet banking (both conventional and Islamic banks) have amplified from 2.6million (2005) to 29.5million (2018). This is a very significant number and it keeps increasing. On the other hand, the total transaction involving internet banking has increased from RM259.1 billion to RM7590.40 billion. Given such a remarkable achievement of internet banking, it is necessary to see on what area of further development needed in order to maintain the development especially in the context of Islamic banking. We choose Islamic banks as a sample of research because there are limited literature available considering this aspect of issue. Most of the literature tends to focus too much on service quality, development, mobile banking, selection criteria of Islamic banking and etc. Less attention is given to this managerial aspect especially on how to maintain their client's continuous adoption towards the usage of internet banking (IB) in Islamic banks and what kind of managerial solution could be taken in order to maintain their usage. Hence, this study aims to answer two main research questions:

1. What are the drivers of behavioural intention and adoption of IB of Islamic banks in Malaysia?
2. What Malaysian Islamic banks could do to boost the clients' level of adoption of IB continuously?

The present study claims two main contributions: firstly, the findings from this study is expected to enhance existing literature on internet banking, especially on Islamic banking. As mentioned earlier, limited research has been done in Malaysia, particularly on intention and adoption of IB in Islamic banks using UTAUT2 framework. This would be breakthrough research in identifying the factor that is influencing customers' continuous adoption of IB. The second contribution is the practical implication where

Islamic banks can take necessary action in order to design a better policy to further accelerate the usage of IB amongst their client. By identifying the factors, this perhaps can allow Islamic banks to invest more idea on those significant factors that influence their interest, and subsequently leads to good business to Islamic banks as the clients nowadays are looking for simplicity and convenience factors when using IB.

2.0 Literature review

2.1 Prior literature

From the organizational context, the need for innovation, up-to-date, convenient and usage of reliable data, the role of information system (IS) is totally undeniable. Today, there is an existence of countless dependency between the firms' performance and it is evolving. Furthermore, firms are making huge profits by adapting to new technologies and making direct or indirect contact with their clients via the assistance of technologies. It does not only affect the ordinary firms, but the impact seems to wider to banking sectors as well. The banking sector uses IS to run its business internally and externally. This includes the marketing of the financial product as well. With this kind of arrangement, the reliance on manpower become less and make the operational side more effective and economies of scales in various aspects. This is making customers to obtain as much as undertakings involving banking activities without too much of human interaction and subsequently increase their utility towards banking services (Tan & Teo, 2000). To be more specific, internet banking is defined as making of banking transactions via a computer network (internet). Through this, either bank or customers can gather, making decisions, upload relevant information, making transaction, look for new financial products, promotion, etc. via the internet (Aladwani, 2001; Yiu et al, 2007). Plenty of literature evidence are available in identifying the concept of internet banking such as mobile banking, electronic banking, the online banking as well as e-banking, the acceptance, intention to use it and adoption of internet banking. (Lee, 2009).

Numerous number of literature evidence available with regard to acceptance of internet baking over the past few years. National and international scholars have provided different insights about this subject matter. The most recent study by Alalwan et al. (2018) aimed to identify the customers' intention of internet banking in the case of Jordan market by extending the theory of UTAUT2. The results show that behavioural intention was influenced by performance expectancy, effort expectancy hedonic motivation, price value and perceived risk but the social influence seems to be insignificant with behavioural intention. Similarly, an outcome with Alalwan's study about the social influence, the study by Merhi et al. (2019) revealed that the same result as well on social influence where this factor together with hedonic motivation are not significantly influencing the consumers' intention to adopt the mobile banking. But the other factors such as habit, trust, privacy and security play an important role in adopting

mobile banking. This results were based on an extended version of UTAUT2 framework and considering two types of consumers (Lebanese and English consumers).

Although these two studies against the social influence element, Martins et al. (2014) argued that social influence, performance expectancy and effort expectancy are the most significant factors in consumers' intention and adoption of internet banking. Slightly different, Riffai et al. (2012) postulate that playfulness and the website design are also playing an important role in influencing the behavioural intention apart from social influence, performance expectancy and effort expectancy. In difference dimension using framework of Technology Acceptance Model (TAM), George (2018) found that perceived ease to use and perceived usefulness have direct association with the intention to use internet banking in Kerala, India followed by other services quality elements such as efficiency, reliability, website efficiency, fulfilment, responsiveness and privacy. Together with George findings, the study by Kesharwani and Bisht (2012) also argued that perceived easy to use are more robust compared to perceived usefulness in adoption of internet banking in India. Abbas et al. (2018) did a study to examine how gender influence the adoption mobile banking in Pakistan. Using 243 questionnaires, and analysed via Structural Equation Modelling (SEM), the result shows that males are more task driven and desire for value, personality and desire and their intention was mainly influenced by perceived usefulness and perceived self-expressiveness compared to women. This finding was supported by Al – Somali et al. (2009) where the authors emphasized that perceived ease to use promote the attitude to use internet banking in Saudi Arabia. Oruc and Tatar (2017) exposed that benefits from internet banking, communication and convenience are more prevalent in influencing consumers to choose internet banking. This was done by considering academics from Dokuz Eylul University, Turkey.
Likewise, Daneshgadeh and Yildirim (2014) verified that compatibility factor has the most robust influence on internet banking usage which is then followed by other elements such alliance service, usefulness, personalization and ease of use. This was done using the model of unique internet banking usage model and covers Turkish bank customers'

The literature from Malaysia with regard to intention and adoption on Information System are widely available but limited literature from Islamic banking perspective. For example, in the study by Khorasanizadeh et al. (2016), authors aimed to analysed the factors which lead to successful adoption of light –emitting diodes – based lighting in Malaysia. Using UTAUT theory, the results show that performance expectancy, effort expectancy, social influence, facilitating condition and behavioural intention are the main reason for light emitting diodes adoption in Malaysia. The study by Masrek et al. (2014) revealed that mobile network, the mobile banking websites and trust have significant relationship with mobile banking satisfaction. Foon and Fah (2009) argued that performance expectancy, effort expectancy, social influence, facilitating condition and trust can explain about 56. 6% of variation in internet banking adoption in Malaysia.

However, this study was based on mainstream bank not Islamic bank. The recent study by Thaker et al. (2019), by employing TAM framework, the results show that the continuity of mobile banking usage by Islamic bank clients are purely depended on usability, customer service, customer satisfaction and trust towards mobile banking services offered by Islamic banks in Malaysia. However, this study looks specifically at satisfaction factors instead of looking at the intention or adoption of mobile banking in Malaysia. Amin et al. (2008) examined the association between the perceived ease of use and intention to use M-banking services and reported that significant association exists between the two variables in the context of Malaysia. The most recent study by Yahaya and Ahmad (2019), employed UTAUT in the dimension of acceptance of Fintech for zakat distribution to Asnaf in Selangor, authors found that all the variables in the UTAUT framework have significant impacts on zakat distribution to Asnaf in Selangor.

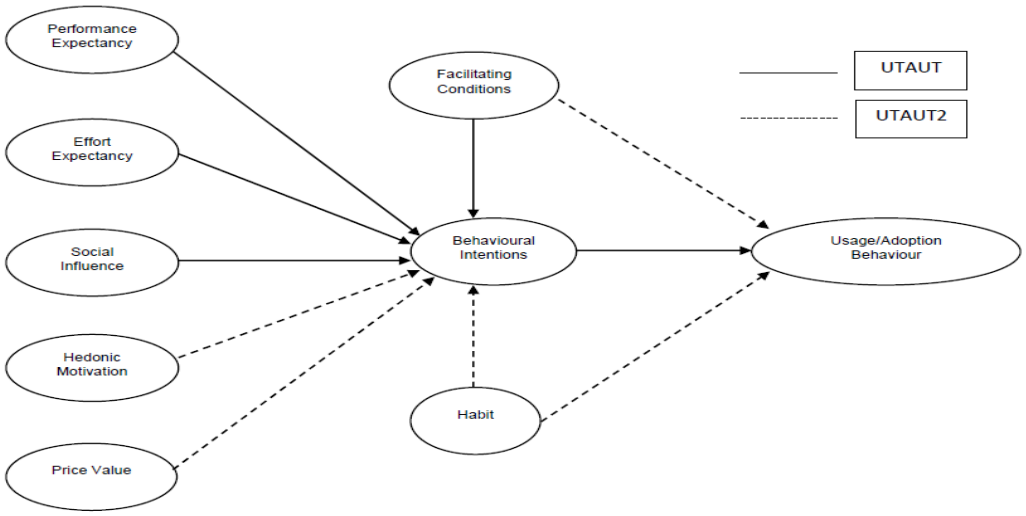
In the existing literature proves that researchers have worked harder to better understand the intention, acceptance and adoption of information system. Unfortunately, limited literatures are available in the context of Islamic banks particularly in Malaysia. The results are possibly mixed with most results showing the different outcomes due to the different dimensions of the research focus. In order to addresses the current status of research in the Internet banking of Malaysian Islamic banks, we initiate to move the literature forward which necessitates utilizing a database that richly characterizes behavioural intention and adoption of internet banking guided by a simple theoretical foundation and advanced analytical modelling.

2.2 Theoretical Foundation and Formulation of Hypothesis

Precisely, the theoretical framework which directly linked to acceptance of technology by customers is the theory developed by Venkatesh et al. (2003) and Venkatesh et al. (2012). To give a brief overview, the study by Venkatesh et al. (2003) purely focused on the adoption and usage of technology by employees. The framework used is called UTAUT (Unified Theory of Acceptance and Use of Technology). Later, Venkatesh et al (2003) reviewed past literature and frameworks especially eight important theories of technology acceptance including Theory of Reason Action (TRA) (Fishbein and Ajzen, 1975), Technology Acceptance Model (Davis, 1989), Motivational Model (MM) (Davis et al. 1992), Theory of Planned Behaviour (Ajzen, 1991), the Model of Personal Computer utilization model (MPCU) (Thompson et al. 1991), Innovation Diffusion Theory IDT (Rogers, 1962), the Social Cognitive Theory (SCT) (Bandura, 1986) and an integrated model of Technology Acceptance and Planned Behaviour (TAM-TPB) (Taylor and Todd, 1995), found four main constructs, namely (i) performance expectancy, (ii) effort expectancy, (iii) social influence and (iv) facilitating condition which influencing behavioural intention and usage behaviour of an individual towards technology. However, the extended version of UTAUT which is called as UTAUT2 added three constructs additionally and they are(i) hedonic motivation, (ii) price value and (iii) habit

to the original UTAUT to determine behavioural intention and usage or adoption behaviour (Venkatesh et al., 2012). Below framework is the difference between UTAUT and UTAUT2:

Figure 1: UTAUT and UTAUT 2



Source: Venkatesh et al. 2012

The above figure shows the differences between UTAUT and UTAUT2. As far as this study is concerned, our analysis will be based on extended version of UTAUT which is UTAUT 2. The hypotheses development and justification are described as below subsections.

2.2.1 Performance Expectancy (PEX)

Commonly speaking, an individual will adopt, involve and engage more in a new system that could execute activities efficiently, more productive and save the effort and time (Dwivedi et al., 2017; Venkatesh et al., 2012). The Hansen, Saridakis, & Benson (2018) study acquaint that the perceived ease of use from Technology Acceptance Model significantly amplifies the effect of perceived behavioural control from Theory of Planned Behaviour on the intention to utilize the electronic platform for dealings. It simply indicates that expectancy is a considerable component to exhibit the relationship towards behavioural intention. Literature evidence shows that performance expectancy has been considered as one of the most significant variable in influencing the behaviroal intention to adopt and use of information system (IS) especially in internet banking (Alalwan et al., 2017; Alalwan et al., 2018; Martins et al., 2014). Consistently, Chang et al. (2015) supported the role of usefulness as similar to expectancy performance on customer intention and preferences. Further evidence by Lin & Kim (2016) support the role of perceived

usefulness on both customer attitudes towards behavioural intention for subscription of any products. Thus, the following has been developed to test variable:

H_1: Performance expectancy will increase Malaysian Islamic bank clients' intention to adopt internet banking.

2.2.2 Effort Expectancy (EEXP)

This variable explains about how easy for the individual to operate the technology (Venkatesh et al., 2003). From the banking context, it tells how easy for the clients to operate the internet banking. The study by Koenig – Lewis et al. (2010) shows that if the technologies are easy to use, it will definitely increase the adaption rate. Furthermore, if the use of technology makes the life of clients' simple, effortless, user – friendly, and less interaction of human dependency, it will cause a perception towards technology and subsequently increases the intention and adoption of internet banking (Lin &Hsieh, 2011; Mazhar et al., 2014; Raza et al., 2018). This is supported by the study of Kishore and Sequeira (2016) where the authors contended that one of the important variable sin influencing internet banking in Karnataka is effort expectancy. Consistently, Eriksson et al. (2015) and Chen et al. (2008) also postulate the same outcome. The hypothesis to test this variable would be:

H_2: Effort expectancy will increase Malaysian Islamic bank clients' intention to adopt internet banking.

2.2.3 Social Influence (SI)

According to Venkatesh et al. (2003), social influence defined as individual's belief how their relatives or friends feel if they adopt technology. From the perspective of internet banking, it is an individual's perception how they relatives or friends feel he or she uses the internet banking. The role of social influence in enhancing the customer intentions and the use of internet banking have been widely analysed in prior studies (Shih & Fang, 2004; Hong et al., 2008; Kaabchi & Obeid, 2014 & Ali et al., 2015). The hypothesis to test this variable would be:

H_3: Social influence will increase Malaysian Islamic bank clients' intention to adopt internet banking.

2.2.4 Facilitating Conditions (FC)

This element looks at technical support available during the usage of technology (Venkatesh et al., 2003). In the context of internet banking, individual need supports or guidance in terms of skills to use, facilities description, security, FAQ etc. The better the FC supports available to the customer, the willingness to use and adopt technology will be higher (Baptista and Oliveira, 2015). According to Akour & Dwairi (2011) and Alwahaishi & Snasel (2013) argued that FC have impact on behavioural intention and continuous usage or adoption of technology. Hence, the below hypothesis are posited:

H_4: Facilitating conditions will increase Malaysian Islamic bank clients' intention to use internet banking.
H_5: Facilitating conditions will influence Malaysian Islamic bank clients to adopt internet banking.

2.2.5 Hedonic Motivation (HM)

Venkatesh et al. (2012) defined hedonic motivation as feeling or emotion appeared during the usage of technology. In the context of internet banking, it is called as a pleasure or fun obtain using internet banking. Case in hold, Venkatesh et al. (2012) also emphasized that there is direction association between HM and intention to use technology. The role of HM and behavioural intention in internet banking and electronic platform have appeared in several studies (Curran & Meuter, 2007; Dodds et al., 1991, & Alalwan et al., 2017). Therefore, we propose the following hypothesis to test this variable:

H_6: Hedonic motivation will increase Malaysian Islamic bank clients' intention to adopt internet banking.

2.2.6 Price Value (PV)

This factor basically looks into the trade-off arise between benefits and monetary cost attached to the usage of technology (Venkatesh et al., 2012). The general costs attached to internet banking are internet charges, service fees, and transaction charges. If the benefits more than the monetary cost. There will be a positive impact of PV towards intention to use (Hong et al., 2008; Shin, 2009). Looking at the existing literature, there are number of literature evidence addressed the impact of price value towards intention behaviour using electronic platforms (Gerrard et al., 2006; Lee & Allaway, 2002; Alalwan, 2018), thus the following hypothesis postulates:

H_7: Price value will increase Malaysian Islamic bank clients' intention to adopt internet banking.

2.2.7 Habit (HB)

According to Venkatesh et al. (2012), habit reflecting repeated action on individual's knowledge and experiences. This factor seems to be a factor that creates steeplechases in the technology acceptance (Venkatesh et al., 2003). Habit found to positively influence the intention to use and adoption of actual usage of technology (Venkatesh et al., 2012; Limayem et al., 2007a; Kolodinsky et al., 2004). Some studies reported a negative aspect of habit towards behavioural intention and adoption of internet banking (Laukkanen et al., 2008 & Wan and Chee, 2004). To test this variable, the following hypothesis has been developed:

H_8: Habit will increase Malaysian Islamic bank clients' intention to use internet banking.
H_9: Habit will influence Malaysian Islamic bank clients to adopt internet banking.

2.2.8 Behavioural Intention (BI)

The behavioural intention has been considered as a strong factor which determines individual behaviour over the technology acceptance torrent (Ajzen, 1985; Venkatesh et al., 2003, 2012). The real behaviour can be obtained via intentions and plays an important role in acceptance of technology (Webb & Sheeran, 2006 & Irani et al., 2009). The existing literature proves that consumer intention found to be the pivotal driver of the adoption or actual use of technology (Shih & Fang, 2004; Raza & Hanif, 2013 & Zhou et al., 2010). Therefore, the following hypothesis will be used to test this variable:

H_{10}: Behavioural intention will increase adoption of internet banking among Malaysian Islamic bank clients'.

3.0 Methodology

3.1 Measurement

Computation of nominal scale based on Amin's (2008) method was used for the demographic analysis. This nominal scale was employed to obtain a range of values for the age of the respondents and many more. The choice of answers was based on a five-point Likert scale adapted from Bhatti (2007) ranking as 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree). With the Likert scale, the respondents selected a choice of responses reflecting their position towards the statement. We used five Likert scales for survey question measurement and some of the questions are borrowed from Venkatesh et al. (2003) and Venkatesh et al. (2012). The items such as performance expectancy, effort expectancy, social influence, facilitating conditions and behavioural intention were suggested by Venkatesh et al. (2003) in the validation of original UTAUT framework. To make it consistent with UTAUT2, this study is also used the same items in addition to the above such as hedonic motivation, price value and habit which was also suggested by Venkatesh et al. (2012). Furthermore,

several studies have used UTAUT2 to examined the customer use or adoption of internet banking (i.e. Liao et al., 1999; Martins et al., 2014). We borrow some questions from these literatures as well.

3.3 Data Collection and Sampling Procedure

The data collected in this research was done via a self-administered questionnaire. Questionnaires were distributed to clients of Islamic banks. We selected two states for this research, namely Selangor and Kuala Lumpur and the sampling we opted was convenience sampling method. The convenience sample of Malaysian Islamic bank's clients was grasped using the following approaches:

i) By passing of questionnaire to respondents via banking staff and later collected from them.
ii) Directly approach the client at Islamic bank branches.
iii) And, also approach working colleagues who used Islamic banking services via internet banking, friends and close relatives who are in public or private sectors and universities.

A total of 340 respondents participated in the survey. However, only 319 (93.83%) out of the 340 questionnaires were used for analysis. The reason for dropping 21 questionnaires is mainly caused by the incomplete answer from the respondents. The questionnaire included two sections, namely (i) demographic profiles of the respondents and, (ii) factors influencing the behavioural intention and adoption of internet banking. The demographic profiles sought were gender, age, marital status, educational level, occupation, monthly income and race. Behavioural intention, on the other hand, was measured by the seven factors as mentioned in the research framework while adoption of internet banking was measured by behavioural intention. Since medium of instruction in Malaysia is Malay language (Bahasa Melayu), but we have opted to use English as language for our questionnaire due to the fact where majority of Malaysian are able to speak English as their second language. The Malay version is provided upon their request and then converted to English for analysis purpose.

As for validation purpose, researcher has used pilot study via distributing 40 questionnaires to Malaysian Islamic banking clients'. The selected clients are requested to view the questionnaire and comments on the questions being asked and freely to comment on their observation such as clarification or feedbacks with regard to questions. A total of 32 questionnaires were collected from this pilot study and most of respondents confirmed and assured that questions are fair enough in terms of clarity, straight to the point and the time allocation seems to reasonable. The number of samples (quantity) seems to be in line with Hair et al. (2009) where a sample size ranging between 200 and 400 is sufficient in order to get precise results. The survey data are analysed using SPSS Statistics Version 22 and Smart Partial Least Square (PLS) Version 3. PLS is used to

examine the constructs' reliability and validity from a particular theoretical framework and also allow the constructs are estimated simultaneously (Thakur, 2014). In addition, the measurement of parameters and structural path coefficients are also tested using this approach. It is also important to emphasize that the PLS approach is getting popular and mostly used in information science researches. According to Bock et al. (2005) and Chin et al. (2003), PLS has many advantages particularly related to sample size, minimal restrictions on measurement scales and residual distributions. Before proceeding with the main analysis, we have also carried out the reliability test, namely the Cronbach Alpha examination. It is noticeable that most the constructs are scores the value above 0.70 which reflects that all constructs items have achieved the required level of internal consistency and acceptable satisfied reliability criteria (Nunnally, 1978). They are ADP (0.70), BI (0.79), EEXP (0.77), FC (0.83), HB (0.74), HM (0.79), PEX (0.81), PV (0.78) and SI (0.81).

4.0 Results

4.1 Respondents' demographic profile

Table 1 summarizes the characteristics of the respondents involved in this survey. As shown in the table, 56 per cent of the sample respondents were male and 44 per cent were female. In terms of age distribution, the dominant group was between 31 to 40 years old and the second largest group is between 41- 50 years old. This percentage is consistent with prior studies which recommended the vitality of this age group. For instance, Metawa and Almossawi (1998) contended that exploring the perception of people and customers within the age of 20 to 50 would yield more impact on policies. As such, this sample of respondents may contribute a useful picture of the analysis of factor contributing to the behavioural intention and adoption of Internet banking among Islamic bank clients' in Malaysia. In terms of marital status, the majority (i.e. 54 per cent) were married whilst 34 per cent were single. From the perspectives of education, the dominant group is those who are holding bachelor degree income level while for the occupation, most of the respondents involved are from private sector employee (60 per cent) and second largest group is from public sector employee (35 per cent). In terms of income level, the dominant group are with earnings of RM3001-RM5000 and RM1000-RM3000. Finally, as for race, this leading is from Muslim, followed by Chinese, Indian and Others.

Table 1: Demographic Profiles

Variables	N	(%)
Gender:		
Male	180	56
Female	139	44
Age:		
20-30 Years	57	18
31-40 Years	143	45
41-50 Years	103	32
> 50 Years	16	5
Marital Status:		
Single	110	34
Married	171	54
Divorced	38	12
Educational Level:		
Secondary (SPM) /Diploma	83	26
Degree	201	63
Postgraduate	35	11
Occupation:		
Public Sector	112	35
Private Sector	192	60
Self - employed	15	5
Monthly Income:		
RM1000-RM3000	71	22
RM3001-RM5000	196	61
Above RM5000	52	17
Race:		
Muslim	172	54
Chinese	110	34
Indian	30	9
Others	7	3

Note: This table shows the information related to respondent profiles in five aspects i.e. gender, age, marital status, educational levels, occupation, monthly income and religions. The number of respondents n = 319.

4.2 Measurement Models

As a starting point, convergent validity test was carried out. In this investigation, items' loadings, average variance extracted (AVE), and composite reliability (CR) were critically analysed. The results are shown in Table 2. With reference to the mentioned table, items' loadings were more than 0.6, which fulfilled the value recommended by Hair et al (2017). The indicator loadings which 0.7, 0.6, 0.5 and 0.4 are adequate if other items have high

scores of ladings to complement AVE and CR. Furthermore, some of the items have to be dropped due to fewer indicator loadings value to avoid fitness of model issue. As for the AVE threshold, the AVE should exceed 0.5 (see Hair et al., 2009). In this study, the AVEs were in the range of 0.549 and 0.581, thus were acceptable. Furthermore, the CR value ranged from 0.769 to 0.880, again consistent with the value suggested by Hair et al. (2009) where the satisfactory value should be in between 0.7 and 0.9.

Table 2. Results of Measurement Model

Constructs	Items	Loadings	AVE	CR
Performance Expectancy (PEX)	Q1	0.936	0.837	0.911
	Q2	0.893		
Effort Expectancy (EEXP)	Q6	0.837	0.687	0.868
	Q7	0.847		
	Q8	0.806		
Social Influence (SI)	Q13	0.783	0.719	0.884
	Q14	0.907		
	Q15	0.849		
Facilitating Conditions (FC)	Q16	0.915	0.742	0.896
	Q17	0.884		
	Q18	0.774		
Hedonic Motivation (HM)	Q21	0.808	0.707	0.878
	Q22	0.901		
	Q23	0.810		
Price Value (PV)	Q28	0.722	0.688	0.868
	Q29	0.905		
	Q30	0.851		
Habit (HB)	Q34	0.871	0.795	0.866
	Q35	0.912		
Behavioural Intention (BI)	Q37	0.775	0.618	0.886
	Q38	0.827		
	Q39	0.813		
	Q40	0.726		
Adoption(ADP)	Q41	0.770	0.622	0.831
	Q42	0.827		
	Q43	0.768		

Note: This table shows the measurement model test which was carried out in the initial stage. Most of the values are consistent with the rule of thumb as suggested by Hair et al. (2009). The measurement tests for items' loadings, average variance extracted (AVE), and composite reliability (CR) accordingly. The number of sample size used are 319.

Following the above analysis of the measurement model, the next process was to plaid for discriminant validity. One of the ways to test for discriminant validity is via Fornell – Larcker (1981) analysis. Unfortunately, evidence from the literature revealed that this method had received criticism in the perspective of it is not justifiable to detect the lack of discriminant validity in general research scopes (Henseler et al., 2015). In this study, even though, it is not recommended, we showed the Fornell-Larcker analysis for discriminant validity for reference and comparison purposes. Table 3 shows all constructs exhibit sufficient or satisfactory discriminant validity (Fornell & Larcker, 1981), where the square root of AVE (diagonal) is larger than the correlations (off-diagonal) for all reflective constructs.

Table 3. Discriminant Validity using Fornell and Lacker Criterion

	ADP	BI	EEXP	FC	HB	HM	PEX	PV	SI
ADP	**0.789**								
BI	0.626	**0.786**							
EEXP	0.101	0.139	**0.829**						
FC	-0.201	-0.263	0.040	**0.861**					
HB	0.358	0.519	-0.005	-0.154	**0.892**				
HM	-0.236	-0.195	-0.011	0.606	-0.066	**0.841**			
PEX	0.126	0.122	0.303	-0.033	0.115	0.036	**0.915**		
PV	0.204	0.215	-0.026	0.111	0.466	0.257	0.141	**0.829**	
SI	-0.145	-0.133	0.192	0.496	-0.045	0.240	0.084	0.147	**0.848**

Note: This table reported the test of discriminant validity using the method called Fornell and Lacker Criterion. As for the fitness of discriminant validity based on this technique, the square root of AVE of a construct should be larger than the correlations between the construct and other constructs in the model. The number of sample size used are 319.

As for a substitute, Henseler et al. (2015) suggested another option for discriminant validity termed the Heterotrait - Monotrait (HTMT) ratio of correlations. Case in hold, they also showed the power of HTMT by means of a Monte Carlo simulation study. This, following its robust power technique, this study also tested for discriminant validity by employing the same method. The rule of thumb of the HTMT test is if the HTMT value is greater than the $HTMT_{0.85}$ value of 0.85 (see Kline, 2011), or the $HTMT_{0.90}$ value of 0.90 (see Gold et al., 2001), then there is the problematic existence of discriminant validity. The result of the HTMT test is shown in Table 4 and the values passed the $HTMT_{0.85}$ and $HTMT_{0.90}$ requirements (see Kline, 2011; Gold et al., 2001). Therefore, it indicates that the measurement model possessed adequate validity and discriminant validity.

Table 4. HTMT Criterion

	ADP	BI	EEXP	FC	HB	HM	PEX	PV	SI
ADP									
BI	0.828								
EEXP	0.137	0.170							
FC	0.254	0.308	0.065						
HB	0.477	0.671	0.047	0.210					
HM	0.315	0.242	0.051	0.748	0.148				
PEX	0.169	0.148	0.385	0.056	0.151	0.085			
PV	0.261	0.267	0.054	0.176	0.616	0.352	0.186		
SI	0.828	0.163	0.243	0.629	0.055	0.297	0.114	0.216	

Note: This table shows the result of the heterotrait - monotrait (HTMT) test. This test is used mainly to determine whether there is discriminant validity in the model. The rule of thumb for this test is based on Kline (2011) and Gold et al. (2001). The sample size used are 319.

Table 5 shows the analysis of collinearity using the Variance Inflation Factor (VIF). The rule of thumb is that if the value of VIF is lesser than 10, then there is no existence of multicollinearity issue, meaning that the variables selected for the analysis are suitable and fitted with the requirement (Gujarati, 2014). The formula to calculate VIF is as follows:

$$VIF_j = \frac{1}{1 - R^2 j}$$

where, $R^2 j$ = represents the multicollinearity coefficient.

Table 5: Collinearity Statistics VIF Values

Constructs	ADP	BI	EEXP	FC	HB	HM	PEX	PV	SI
VIF	1.447	1.822	1.817	1.968	1.542	1.790	1.667	1.728	1.826

This table reports the analysis of VIF. The VIF testing is used to check for multicollinearity problem in the model. If the values are less than 10, there is no existence of multicollinearity issues in the model and vice versa. The number of samples is 319.

4.3 Assessment of Structural Model

Ramayah et al. (2016) suggested the R^2 value measures the goodness of the structural model. Similarly, Hair et al. (2011) also stated that the coefficient of determination and the level of significance of the path coefficients (beta values) can be measured by the R^2. The R^2 for the generated results was 0.60 (60%) for adoption of Islamic banks internet banking services. It means that 60 % of variance of adoption of internet banking could be explained by behavioural intention. As for behavioural intention, the R-square is (53%) suggesting that 53 per cent of the variance of behavioural intention in using internet banking could be explained by EEXP, FC, HB, HM, PEX, PV and SI. To further measure the

significance of the assessment model, the current study computed path coefficient the structural model and performed the bootstrap analysis. Table 6 also shows that eight hypotheses out of ten are having a statistically significant relationship. Further discussion on the statistical relationship is given below.

Table 6. Results of Structural Model

Hypothesis	R/ship	Path Coefficient	Std. error	t-value	Significance (Yes/No)
H1	PEX ->BI	0.162	0.052	2.867**	Yes
H2	EEXP -> BI	0.182	0.060	2.852**	Yes
H3	SI -> BI	-0.078	0.059	1.243	No
H4	FC -> BI	0.311	0.061	5.089**	Yes
H5	FC -> ADP	0.259	0.058	4.402*	Yes
H6	HM -> BI	-0.097	0.065	1.382	No
H7	PV -> BI	0.268	0.069	3.899***	Yes
H8	HB -> BI	0.671	0.061	10.952***	Yes
H9	HB -> ADP	0.485	0.062	7.705*	Yes
H10	BI -> ADP	0.830	0.050	16.421**	Yes

Note: This table shows the results of the structural model using Partial Least Square (PLS) version 3. The R-Square value is 0.600 and the sample size is 319. The signs *, **, *** denote significance at 10%, 5% and 1% respectively.

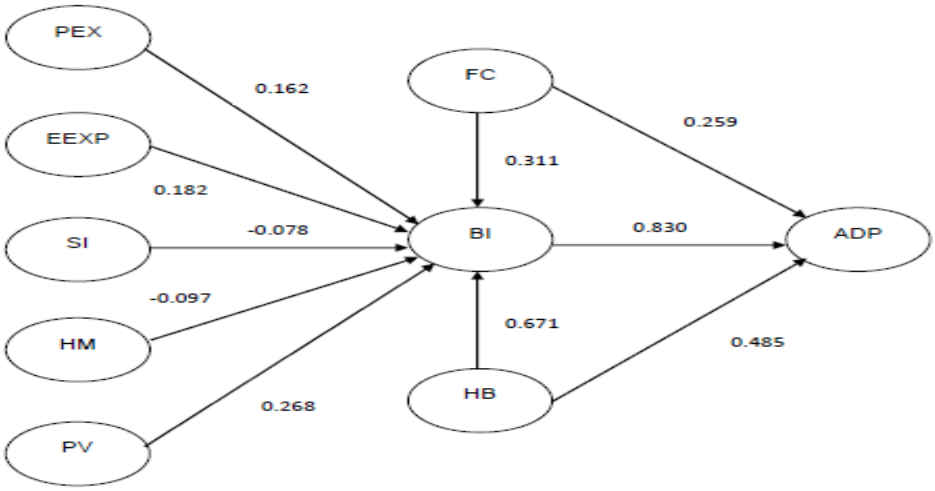
4.4 Discussion of the results

The findings show a good measurement and structural model. Out of ten hypotheses, eight hypotheses are supported significantly. The decision for the first hypothesis (H_1) is supported, meaning that PEX will increase Malaysian Islamic bank clients' intention to adopt internet banking. The path coefficient between PEX and BI is positive (*0.162*) at the significance level of 5 percent ($p < 0.05$). This outcome seems to be consistent with the findings generalized by Alalwan et al (2018) and Chang et al. (2015). This indicates that, if the internet banking of Islamic banks enhances the customer expectancy, there would be direct effect towards intention to use and lead to continous adoption of internet banking services by clients' (Raza et al. 2018; Yu, 2012). Following that, the next hypothesis between EEXP and intention to adopt internet banking. The path coefficient is positive meaning that higher the EEXP such as easiness to use etc. will lead to higher intention to use or adopt internet banking among Malaysian Islamic bank clients'. This result is in line with the findings made by Eriksson et al. (2015) and Cheng et al. (2006). Thus, the decision for this hypothesis is supported given the path coefficient is positive (o.182) and p-value ($p < 0.05$). Hypothesis number 3 is between SI and intention to adopt internet banking and it is not supported. The relationship is negative (-0.078) with insignificant p-value (>0.05). the negative relationship perhaps due to the fact where the personal financial data could confidential and protected by the individual themselves.

With this regard, the role of social may not be so important as internet banking is more towards personal and sensitive matter. This generalisation is inconsistent with Oliveira (2014). The hypotheses decisions for H_4 and H_5 (FC to BI) and (FC to ADP) are supported with positive coefficients of (0.311 and 0.259) and p-value significance at 5% and 10%. Both of these reveals that if the users are given better facilitating conditions such as technical supports and basic infrastructure needs, it will lead to better acceptance of internet banking among Islamic bank clients'. This is also consistent with the works done by Zhou et al. (2010) and Alalwan et al. (2018).

The next hypothesis (H_6) is between HM and intention to adopt internet banking. The decision for this hypothesis is not supported by a negative relationship. This is consistent with findings postulated by Oliveira (2015) where it is due to the fact of data privacy and confidential matters. The same outcome is also revealed by Lewis et al. (2013). Following that, (H_7), the decision for this hypothesis is supported with positive path-coefficient (0.268) and significant p-value at 10%. This is consistent with the study by Akturan & Tezcan (2012). If the customer feels that internet banking save their time and transaction costs, it will lead to better usage of internet banking and continuous adoption of internet banking. Following Akturan & Tezcan's, other studies are also postulated the same outcome such as Lee & Allaway (2002) and Alalwan et al. (2018).H_8 and H_9 show a significant positive relationship between HB to BI and HB to ADP. The values are significant at 1% and 10%. This is in accordance with Venkatesh et al. (2012), Limayem et al. (2007a), Kolodinsky et al. (2004) and Liao et al. (2006). Meaning that clients habit plays an important role in increasing their intention to use internet banking and subsequently lead to greater adoption of internet banking. The last hypothesis (H_{10}) is between BI and ADP and it is supported that BI has a significant positive relationship with the adoption of internet banking among Malaysian Islamic banks clients (path-coefficient = 0.830 and $p < 0.05$). This is also in line with the finding by Alalwan et al. (2018) and Teo (2011). Furthermore, existing literature demonstrates that consumer intention is found to be main driver of the adoption or actual use of technology (Shih & Fang, 2004; Raza & Hanif, 2013 & Zhou et al., 2010). Figure 2 below shows the validated model for this study which shows the direction of path relationships.

Figure 2. Validated Conceptual Model



5.0 Conclusion

This study conducted to accelerate further understanding about the client's behavioural intention and adoption of IB in Malaysian Islamic banks. The samples are only focusing on two major states, Kuala Lumpur and Selangor. Guided by UTAUT2 framework, we have identified seven important factors as a key predictor of behavioural intention and adoption of IB. The data collection was based on questionnaire distribution to 319 respondents. Later, the data was analysed using the Partial Least Square (PLS). The R-Squared value of 0.60 revealed that the variance of adoption of IB could be explained by behavioural intention while 53 per cent of the variance of behavioural intention in using internet banking could be explained by EEXP, FC, HB, HM, PEX, PV and SI. Out of ten hypotheses, eight hypotheses are supported significantly. The yielding results have been described in the light of logical explanation with literature support and the study also offers some implications from literature and managerial perspectives. Future research recommendations may look at how demographic profiles influence the usage of IB acceptance. Furthermore, future research is also can look at which factor the customer prioritize more when choosing IB. This also one of the possible areas of research in this scope.

6.0 Policy Implications

6.1 Body of Knowledge

Firstly, the findings generated from this study expected to enrich the literature on the body of knowledge as it has served to broaden the understanding of IB behavioural intention to use and the adoption of IB. The results generated are guided by UTAUT2 theoretical framework. As mentioned, there are limited literature available using this

framework and analysis of the IB. Some studies are available, but unfortunately, the scopes are different areas. In Malaysia and other Southeast Asia countries, focusing too much on IB of conventional banking have led to less research on IB of Islamic banks. Basically, less attention is given to IB of Islamic banks and this study expected to provide a brief discussion and literature support on this IB.

6.2 Managerial Implications

There are several managerial implications from Islamic bank perspectives where they can take necessary action to enhance the continuous acceptance and usage of internet banking among their clients. Based on the results generated from this study, we can clearly see that most of the variables are statistically significant and, therefore, Islamic banks could adopt some actions based on key findings from this study. Firstly, it must be suited for different groups of people need. For example, an ordinary person, they want to IB given the usage costs are lower while the professional group might be concerned with regard to reliability and easiness of banking services via IB. By understanding the needs of different groups of people, it will help to enhance the services and make the IB of Islamic banks are in line with counterpart (conventional) IB development.

In terms of performance expectancy and expect expectancy, perhaps Islamic banks should make IB of Islamic banking more attractive and incorporate more functionality. Right now, the Islamic banks in Malaysia almost have all the functions adapted in the system but others such as direct application of loan, documents processing via cloud drive, products disclosure etc. are not available. Such features need to be incorporated into the system and make the IB of Islamic banks more sustainable. Similar suggestions were also postulated by Laukkanen et al. (2008) and Irani et al. (2009) in the sense of performance expectancy and expect expectancy. With such an arrangement, it can save plenty of time consumption when accessing services via IB facing by the Islamic bank clients and also will attract more client to use IB.

From the perspective of facilitating condition, Islamic banks need to enhance facilities on IB and convince the client that practice IB is not so difficult and it is not far different from other technologies. Easiness to use is very important under facilitating conditions. One way to convince would be a direct conversation with client when they subscribe to a bank account. Explaining to them the benefits of IB especially those who are from a rural area and 24/7 call centre to deal with the problems such as failed transaction, system was hacked, system down etc. of IB must also be enhanced. This is because not all call services available especially after 12.00am and some are not even connected to the line (Simintiras et al., 2014; Yousafzai et al., 2005). As far as the price value of IB is concern, Malaysian Islamic banks relatively doing well in part. Some banks charges seem to be low and reasonable. Unfortunately, the perception among rural clients is that they are afraid of extra charges when doing transaction via IB. This issue can be

solved when the clients are well informed via face to face discussion during the subscription time.

Habit is having a positive association with behavioural intention and adoption of IB. In order for retaining the Islamic bank's competitive edge in terms of habit is that there must be some rewards or points given to them whenever the client using the IB services. The rewards can be in the forms of monetary or non-monetary. This will heighten the client's interest in IB and drive up their loyalty towards IB. Lastly, social influence and hedonic motivation found to be negatively related and not significant. There are some suggestions to handle this issues from a managerial point of view. Awareness of advantage of IB needs to be wider and promoted at states level. Without awareness, they (client) could not understand the concept of IB in general. The main target would be the rural client. Some of them (rural client) not even know that there is a facility in IB where we can directly transfer cash from account to Hajj account as well as unit trust account. Awareness plays an important role in this regard and marketing via social media is also highly recommended where this platform, nowadays are carrying a high degree of accessibility via various applications (Berthon et al., 2012). Improving all these aspects as stated above will make the clients feel fun and enjoyable (Hedonic motivation) in using the IB.

References

Abbas, S. K., Hassan, H. A., Asif, J., Ahmed, B., Hassan, F., & Haider, S. S. (2018). Integration of TTF, UTAUT, and ITM for mobile Banking Adoption. *International Journal of Advanced Engineering, Management and Science*, *4*(5), 375-379.

Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, *50*(2), 179-211.

Akour, I. A., & Dwairi, M. A. (2011). Testing technology acceptance model in developing countries: The case of Jordan. *International Journal of Business and Social Science*, *2*(14).

Akturan, U., & Tezcan, N. (2012). Mobile banking adoption of the youth market: Perceptions and intentions. *Marketing Intelligence & Planning*, *30*(4), 444-459.

Aladwani, A. M. (2001). Online banking: a field study of drivers, development challenges, and expectations. *International Journal of Information Management*, *21*(3), 213-225.

Alalwan, A. A., Dwivedi, Y. K., Rana, N. P., & Algharabat, R. (2018). Examining factors influencing Jordanian customers' intentions and adoption of internet banking: Extending UTAUT2 with risk. *Journal of Retailing and Consumer Services*, *40*, 125-138.

Alalwan, A. A., Rana, N. P., Dwivedi, Y. K., & Algharabat, R. (2017). Social media in marketing: A review and analysis of the existing literature. *Telematics and Informatics*, *34*(7), 1177-1190.

Ali, M., Raza, S.A. and Puah, C.H. (2015), Factors affecting to select Islamic credit cards in Pakistan: the TRA model, Journal of Islamic Marketing, (accepted), 00-00.

Al-Somali, S. A., Gholami, R., & Clegg, B. (2009). An investigation into the acceptance of online banking in Saudi Arabia. *Technovation*, *29*(2), 130-141.

Amin, H. (2008). Factors affecting the intentions of customers in Malaysia to use mobile phone credit cards. *Management Research News*, *31*(7), 493-503.

Amin, H. (2008). Factors affecting the intentions of customers in Malaysia to use mobile phone credit cards. *Management Research News*, *31*(7), 493-503.

Alwahaishi, S., & Snásel, V. (2013). Acceptance and use of information and communications technology: a UTAUT and flow based theoretical model. *Journal of technology management & innovation*, *8*(2), 61-73.

Bandura, A. (1986). The explanatory and predictive scope of self-efficacy theory. *Journal of Social and Clinical Psychology*, *4*(3), 359-373.

Baptista, G., & Oliveira, T. (2015). Understanding mobile banking: The unified theory of acceptance and use of technology combined with cultural moderators. *Computers in Human Behaviour*, *50*, 418-430.

Berthon, P. R., Pitt, L. F., Plangger, K., & Shapiro, D. (2012). Marketing meets Web 2.0, social media, and creative consumers: Implications for international marketing strategy. *Business Horizons*, *55*(3), 261-271.

Bhatti, K. K., and Qureshi, T. M. (2007). Impact of employee participation on job satisfaction, employee commitment and employee productivity. *International Review of Business Research Papers*, *3*(2), 54-68.

Bock, G. W., Zmud, R. W., Kim, Y. G., & Lee, J. N. (2005). Behavioral intention formation in knowledge sharing: Examining the roles of extrinsic motivators, social-psychological factors, and organizational climate. *MIS quarterly*, *29*(1), 87-111.

Chang, C. C., Lin, L. M., Chen, I. H., Kang, C. M., & Chang, W. Y. (2015). Perceptions and experiences of nurse preceptors regarding their training courses: A mixed method study. *Nurse Education Today*, *35*(1), 220-226.

Chen, C. H. (2008). Why do teachers not practice what they believe regarding technology integration?. *The Journal of Educational Research*, *102*(1), 65-75.

Cheng, J.M., Sheen, G.J., Lou, G.C., 2006. Consumer acceptance of the Internet as a channel of distribution in Taiwan - a channel function perspective. T*echnovation, 26* (7), 856–864.

Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information Systems Research*, *14*(2), 189-217.

Curran, J. M., & Meuter, M. L. (2007). Encouraging existing customers to switch to self-service technologies: put a little fun in their lives. *Journal of Marketing Theory and Practice*, *15*(4), 283-298.

Daneshgadeh, S., & Yıldırım, S. Ö. (2014). Empirical investigation of internet banking usage: The case of Turkey. *Procedia Technology*, *16*, 322-331.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology*, *22*(14), 1111-1132.

Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research*, *28*(3), 307-319.

Dwivedi, Y. K., Rana, N. P., Jeyaraj, A., Clement, M., & Williams, M. D. (2019). Re-examining the unified theory of acceptance and use of technology (UTAUT): Towards a revised theoretical model. *Information Systems Frontiers*, *21*(3), 719-734.

Eriksson, K., Johanson, J., Majkgård, A., & Sharma, D. D. (2015). Experiential knowledge and cost in the internationalization process. In *Knowledge, Networks and Power* (pp. 41-63). Palgrave Macmillan, London.

Ernst and Young (2016), World Islamic Banking Competitiveness Report 2016, available at: www. ey.com/Publication/vwLUAssets/ey-world-Islamic-banking-competitiveness-report-2016/ $FILE/ey-world-islamic-banking-competitiveness-report-2016.pdf (accessed 24 May 2017).

Fishbein, M. and I. Ajzen.(1975). Belief. Altitude. Intention ami Behavior: An Introduction to Theory and Research, Addison-Wesley, Reading. MA.

Foon, Y. S., & Fah, B. C. Y. (2011). Internet banking adoption in Kuala Lumpur: an application of UTAUT model. *International Journal of Business and Management*, *6*(4), 161-182.

Fornell, C., and Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*, 1(1), 382-388.

George, B., Desmidt, S., Cools, E., & Prinzie, A. (2018). Cognitive styles, user acceptance and commitment to strategic plans in public organizations: an empirical analysis. *Public Management Review*, *20*(3), 340-359.

Gerrard, P., Cunningham, J. B., and Devlin, J. F. (2006). Why consumers are not using Internet banking: A qualitative study. *Journal of Services Marketing*, *20*(3), 160–168.

Gold, A. H., Malhotra, A., and Segars, A. H. (2001). Knowledge management: An organisational capabilities perspective. *Journal of Management Information Systems*, *18*(1), 185-214.

Gujarati, D. N. (2014). Econometrics by example. Palgrave Macmillan., New York, USA.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., and Tatham, R. L. (2009). *Análise multivariada de dados*. Bookman Editora.

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., and Thiele, K. O. (2017). Mirror, mirror on the wall: a comparative evaluation of composite-based structural equation modelling methods. *Journal of the Academy of Marketing Science*, *45*(5), 616-632.

Hair, J. F., Ringle, C. M., and Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. Journal of Marketing Theory and Practice, *19*(2), 139-152.

Hansen, J. M., Saridakis, G., & Benson, V. (2018). Risk, trust, and the interaction of perceived ease of use and behavioral control in predicting consumers' use of social media for transactions. *Computers in Human Behavior*, *80*, 197-206.

Henseler, J., Ringle, C. M., and Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modelling. Journal of the Academy of Marketing Science, *43*(1), 115-13.

Hong, S. J., Thong, J. Y., Moon, J. Y., & Tam, K. Y. (2008). Understanding the behavior of mobile data services consumers. *Information Systems Frontiers*, *10*(4), 431-466

Irani, Z., Dwivedi, Y.K., Williams, M.D., 2009. Understanding consumer adoption of broadband: an extension of the technology acceptance model. *J. Operational Res.Society, 60*(10), 1322–1334.

Kaabachi, S., & Obeid, H. (2014). The Islamic bank in Tunisia: brakes, motivations and expectations of the banking clientele. *Banque et Strategie*, *32*(3), 41-50.

Kesharwani, A., & Singh Bisht, S. (2012). The impact of trust and perceived risk on internet banking adoption in India: An extension of technology acceptance model. *International Journal of Bank Marketing*, *30*(4), 303-322.

Khorasanizadeh, H., Honarpour, A., Park, M. S. A., Parkkinen, J., & Parthiban, R. (2016). Adoption factors of cleaner production technology in a developing country: energy efficient lighting in Malaysia. *Journal of Cleaner Production*, *131*, 97-106.

Kishore, S. K., & Sequeira, A. H. (2016). An empirical investigation on mobile banking service adoption in rural Karnataka. *Sage Open*, *6*(1), 21-58

Kline, R. B. (2011). Principles and Practice of Structural Equation Modelling (3rd Ed.) New York: The Guilford Press.

Koenig-Lewis, N., Palmer, A., & Moll, A. (2010). Predicting young consumers' take up of mobile banking services. *International Journal of Bank Marketing*, *28*(5), 410-432.

Kolodinsky, J.M., Hogarth, J.M., Hilgert, M.A., 2004. The adoption of electronic banking technologies by US consumers. *Int. J. Bank Mark. 22*(4), 238–259.

Kuala Lumpur Islamic Finance Forum (2019). Accessible via https://www.nst.com.my/news/nation/2019/04/478016/pm-islamic-banking-players-must-invest-technologies

Laukkanen, P., Sinkkonen, S., Laukkanen, T., 2008. Consumer resistance to internet banking: postponers, opponents and rejectors. *Int. J. Bank Mark. 26* (6), 440–455.

Lee, J., & Allaway, A. (2002). Effects of personal control on adoption of self-service technology innovations. *Journal of Services Marketing*, *16*(6), 553-572.

Lee, M. C. (2009). Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit. *Electronic Commerce Research and Applications*, *8*(3), 130-141.

Lewis, D., K. Brazil, P. Krueger, L. Lohfeld and E. Tjam, 2001. Extrinsic and intrinsic determinants of quality of work life. Leaders. *Health Serv*., *14*: 9-15.

Liao, S., Shao, Y., Wang, H., Chen, A., 1999. The adoption of virtual banking: an empiricalstudy. *Int. J. Inf. Manag*. *19*(1), 63–74.

Limayem, M., Hirt, S.G., Cheung, C.M.K., 2007a. How habit limits the predictive power of intentions: the case of IS continuance. *MISQ*. *31*(4), 705–737.

Lin, C. A., & Kim, T. (2016). Predicting user response to sponsored advertising on social media via the technology acceptance model. *Computers in Human Behaviour*, *64*, 710-718.

Lin, J.S.H., Hsieh, P.L., 2011. Assessing the self-service technology encounters: Development and validation of SSTQUAL scale. *J. Retail*. *87*(2), 194–206.

Martins, C., Oliveira, T., & Popovic, ˇ A. (2014). Understanding the Internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. *International Journal of Information Management*, *34*, 1–13.

Masrek, M. N., Mohamed, I. S., Daud, N. M., & Omar, N. (2014). Technology trust and mobile banking satisfaction: a case of Malaysian consumers. *Procedia-Social and behavioral sciences*, *129*, 53-58.

Mazhar, F., Rizwan, M., Fiaz, U., Ishrat, S., Razzaq, M. S., & Khan, T. N. (2014). An investigation of factors affecting usage and adoption of internet & mobile banking in Pakistan. *International Journal of Accounting and Financial Reporting*, *4*(2), 478- 482.

Merhi, M., Hone, K., & Tarhini, A. (2019). A cross-cultural study of the intention to use mobile banking between Lebanese and British consumers: Extending UTAUT2 with security, privacy and trust. *Technology in Society*, *10*, 11-51.

Metawa, S. A., & Almossawi, M. (1998). Banking behavior of Islamic bank customers: perspectives and implications. *International Journal of Bank Marketing*, *16*(7), 299-313.

Oliveira, T., Faria, M., Thomas, M. A., & Popovič, A. (2014). Extending the understanding of mobile banking adoption: When UTAUT meets TTF and ITM. *International Journal of Information Management*, *34*(5), 689-703.

Oruç, Ö. E., & Tatar, Ç. (2017). An investigation of factors that affect internet banking usage based on structural equation modelling. *Computers in Human Behaviour*, *66*, 232-235.

Ramayah, T., Ling, N. S., Taghizadeh, S. K., and Rahman, S. A. (2016). Factors influencing SMEs website continuance intention in Malaysia. *Telematics and Informatics*, *33*(1), 150-164.

Raza, S.A. and Hanif, N. (2013), Factors affecting internet banking adoption among internal and external customers: a case of Pakistan, *International Journal of Electronic Finance*, *7*(1), 82-96.

Raza, S. A., Qazi, W., & Shah, N. (2018). Factors affecting the motivation and intention to become an entrepreneur among business university students. *International Journal of Knowledge and Learning*, *12*(3), 221-241.

Riffai, M. M. M. A., Grant, K., & Edgar, D. (2012). Big TAM in Oman: Exploring the promise of on-line banking, its adoption by customers and the challenges of banking in Oman. International Journal of Information Management, *32*, 239–250.

Rogers Everett M., Diffusion of innovations, 1962, Collier Macmillan Inc.

Shih, Y. Y., & Fang, K. (2004). The use of a decomposed theory of planned behavior to study Internet banking in Taiwan. *Internet Research*, *14*(3), 213-223.

Shin, D. H. (2009). Understanding user acceptance of DMB in South Korea using the modified technology acceptance model. *Intl. Journal of Human–Computer Interaction*, *25*(3), 173-198.

Shih, Y. Y., & Fang, K. (2004). The use of a decomposed theory of planned behavior to study Internet banking in Taiwan. *Internet Research*, *14*(3), 213-223.

Simintiras, A. C., Yeniaras, V., Oney, E., & Bahia, T. K. (2014). Redefining confidence for consumer behavior research. *Psychology & Marketing*, *31*(6), 426-439.

Tan, M., & Teo, T. S. (2000). Factors influencing the adoption of Internet banking. *Journal of the Association for information Systems*, *1*(1), 5-17.

Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research*, *6*(2), 144-176.

Thaker, M. A. B. M. T., Amin, M. F. B., Thaker, H. B. M. T., & Pitchay, A. B. A. (2019). What keeps Islamic mobile banking customers loyal? *Journal of Islamic Marketing*. 10(2), 525-542.

Thakur, R., & Srivastava, M. (2014). Adoption readiness, personal innovativeness, perceived risk and usage intention across customer groups for mobile payment services in India. *Internet Research*, 24(3), 369-392.

The Demand Institute (2017), The Demand Institute Report 2017, available at: http://demandinstitute. org/ (accessed 20/1/2019).

Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Personal computing: toward a conceptual model of utilization. *MIS Quarterly*, 125-143.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 425-478.

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS Quarterly*, *36*(1), 157-178.

Wan, G.H., Che, P., 2004. Chinese air travelers' acceptance towards electronic ticketing in Proceedings of Engineering Management Conference, (1, pp. 269–275, 18th–21st October 2004. IEEE.

Webb, T. L., & Sheeran, P. (2006). Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin*, *132*(2), 249.

Yahaya, M. H., & Ahmad, K. (2019). Factors Affecting the Acceptance of Financial Technology among Asnaf for the Distribution of Zakat in Selangor-A Study Using UTAUT. *Journal of Islamic Finance*, *8*, 035-046. Technology: Extending the unified theory of acceptance and use of technology. *MIS Q*. *36*(1), 157–178.

Yiu, C. S., Grant, K., & Edgar, D. (2007). Factors affecting the adoption of Internet Banking in Hong Kong—implications for the banking sector. *International Journal of Information Management*, *27*(5), 336-351.

Yousafzai, S. Y., Pallister, J. G., & Foxall, G. R. (2005). Strategies for building and communicating trust in electronic banking: A field experiment. *Psychology & Marketing*, *22*(2), 181-201.

Yu, C. S. (2012). Factors affecting individuals to adopt mobile banking: Empirical evidence from the UTAUT model. *Journal of Electronic Commerce Research*, *13*(2), 104 - 121.

Zhou, T., Lu, Y. and Wang, B. (2010), Integrating TTF and UTAUT to explain mobile banking user adoption, *Computers in Human Behavior*, *26*(4), 760-767.