THE DETERMINANTS OF BEHAVIORAL ACCEPTANCE FOR TAX E-FILING AMONG TAX PREPARERS IN MALAYSIA

By

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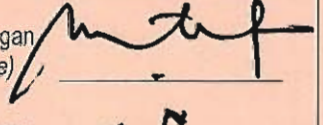
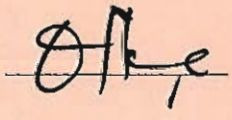
Pemeriksa Luar *(External Examiner)*	: **Prof. Dato' Dr. Mustafa Mohd Hanefah**	Tandatangan *(Signature)*	
Pemeriksa Luar *(External Examiner)*	: **Prof. Madya Dr. Omar Zakaria**	Tandatangan *(Signature)*	

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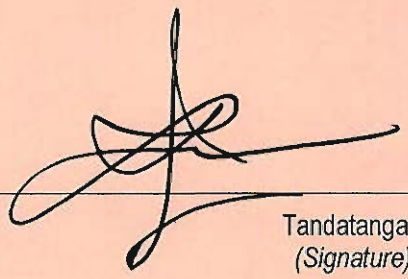

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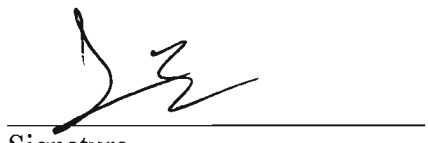

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ABSTRACT

Are we ready to fully transform manual application to electronic engagement in achieving Vision 2020? At the last phase of the e-government development, despite the huge investment put forward, the behavioral intention acceptability is in doubt and has not fully achieved the target. How far this opportunity has been taken by Malaysians is the main concern of this research. In taxation, specifically in corporate tax e-filing, acceptability seems to be low/unsatisfactory as reported by the Inland Revenue Board of Malaysia (IRBM). The percentage of engagement is unsatisfied even after 10 years of tax e-filing implementation. Thus, the situation of the technology of tax e-filing being underutilized, despite the evolution requires some explanations. This indirectly could possibly risk the achievement of the government transformation programs. In seeking imperative answers, this research is designed for the following objectives: (1) to determine the level of acceptance of tax e-filing among Malaysian tax agents/preparers , (2) to identify the determinants of tax e-filing acceptability and (3) to examine how the factors identified in (2) are related to tax e-filing acceptability. The results of this research were obtained via simple random sampling from 213 respondents by using Structural Equation Modeling (SEM), Partial Lease Square (PLS) and Bootstrapping. They provide a useful tool to determine and assess the possibility for new technology introductions. Indirectly, the understanding could reduce the percentage of resistance to adopt any new system, which takes into account the few factors identified in this research. Conclusively, the findings support the Unified Theory of Acceptance and the Use of Technology (UTAUT) theory in particular, and are consistent with previous findings in general. Hence, the new development in this tax e-filing aspect certainly would give impacts on the theory as well as management.

Keywords: Unified Theory of Acceptance and Use of Technology (UTAUT), tax agents/preparers, tax e-filing.

ABSTRAK

Adakah kita sudah bersedia untuk mentransformasikan sistem manual kepada penggunaan elektronik ke arah mencapai Visi 2020? Pada fasa terakhir pembangunan e-kerajaan, di samping peruntukkan pelaburan yang besar, perlakuan dalam keinginan kebolehterimaan masih diragukan dan tidak sepenuhnya mencapai sasaran. Sejauh mana peluang ini diambil oleh rakyat Malaysia adalah tujuan utama kajian ini dilakukan. Di dalam aspek pencukaian, secara khususnya di dalam e-pemfailan cukai korporat, kebolehterimaannya tampak rendah atau tidak memuaskan seperti yang dilaporkan oleh Lembaga Hasil Dalam Negeri Malaysia (LHDNM). Peratusan penerimaan masih kurang memuaskan walaupun setelah 10 tahun penggunaan pemfailan cukai secara elektronik. Oleh yang demikian, situasi penggunaan e-pemfailan cukai yang rendah, di samping pelbagai evolusi yang memerlukan beberapa penjelasan, secara tidak langsung memberikan kesan terhadap pencapaian program transformasi kerajaan. Oleh itu, kajian ini telah dibentuk mengikut objektif-objektif tersebut: (1) untuk menentukan tahap penerimaan e-pemfailan cukai dalam kalangan ejen atau penyedia cukai di Malaysia; (2) untuk mengenalpasti penentu kebolehterimaan e-pemfailan cukai; dan (3) untuk meneliti bagaimana faktor-faktor yang dikenal pasti dalam objektif kedua (2) berkaitan dengan kebolehterimaan e-pemfailan cukai. Dapatan kajian ini diperoleh melalui pensampelan rawak mudah terhadap 213 responden dan menggunakan kaedah Structural Equation Modeling (SEM), Partial Lease Square (PLS) *dan* Bootstrapping. *Kaedah ini amat berguna dalam menentukan dan menaksirkan kemungkinan untuk memperkenalkan teknologi baru. Secara tidak langsung, kefahaman tersebut boleh mengurangkan peratusan penolakan bagi menggunakan sistem yang baru dengan mengambil kira beberapa faktor seperti yang dikenal pasti di dalam kajian ini. Secara keseluruhan, dapatan kajian ini adalah menyokong teori* Unified Theory of Acceptance and Use of Technology (UTAUT) *dan secara umumnya sejajar dengan dapatan kajian-kajian yang terdahulu. Oleh yang demikian, perkembangan terbaru di dalam aspek e-pemfailan cukai ini pasti memberi beberapa impak ke atas teori serta pengurusan.*

Katakunci: Unified Theory of Acceptance and Use of Technology (UTAUT), *ejen/penyedia cukai, pemfailan cukai elektronik.*

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Saliza Abdul Aziz

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ABBREVIATIONS

HSBB	:	High-speed broadband
MSC	:	Multimedia Super Corridor
IRB	:	Inland Revenue Board
MAMPU	:	Malaysian Administrative Modernization and Management Planning Unit
SMS	:	Short message service
PDRM	:	Royal Malaysian Police
EPF	:	Employees Provident Fund
ICT	:	Information and Communications Technology
E-government	:	Electronic government
GITN	:	Government Integrated Telecommunications Network
E-filing	:	Electronic filing
G2C	:	Government to Community
PKI	:	Public Key Infrastructure
IT	:	Information technology
UTAUT	:	Unified Theory of Acceptance and Use of Technology
TRA	:	Theory of Reasoned Action
TAM/TAM2/	:	Technology Acceptance Model/ Technology Acceptance Model 2/
TAM3	:	Technology Acceptance Model 3
MM	:	Motivational Model
TPB	:	Theory of Planned Behavior
DTPB	:	Decomposed Theory of Planned Behavior
C-TAM-TPB	:	Combined TAM-TPB
MPCU	:	Model of PC Utilization
IDT	:	Innovation Diffusion Theory
SCT	:	Social Cognitive Theory
PCB	:	Perceived Behavioral Control
PE	:	Performance Expectancy
EE	:	Effort Expectancy
SI	:	Social Influence
FC	:	Facilitating Conditions
PV	:	Perceived Value
DC	:	Design Characteristics
IA	:	Incentive Alignment
UP	:	User Participation
T	:	Training
OPS	:	Organization and Peer Supports
FA	:	Factor Analysis
EFA	:	Exploring Factor Analysis
CFA	:	Confirmatory Factor Analysis
SEM	:	Structural Equation Modeling

PLS	:	Partial Lease Square
AVE	:	Average Variance Extracted
CR	:	Construct Reliability / Composite Reliability
CA	:	Cronbach Alpha
KMO	:	Kaiser-Meyer-Olkin
BTOS	:	Batlett's Test of Sphericity
x^2 GOF	:	Chi-Square Goodness-of-Fit
x^2	:	Chi-Square
GOF	:	Goodness-of-Fit
DF	:	Degree of Freedom
GFI	:	Goodness-of-Fit Index
RMSEA	:	Root Mean Square Error of Approximation
RMSR	:	Root Mean Square Residual
SRMR	:	Standardized Root Mean Residual
NFI	:	Normed Fit Index
TLI	:	Tucker-Lewis Index
CFI	:	Comparative Fit Index
AGFI	:	Adjusted Goodness of Fit Index
VIF	:	Variance Inflation Factor

CHAPTER 1

INTRODUCTION

1.1 Background of Study

How can we be certain that Malaysia will be fully developed by the year 2020? Are we in the right place? In the era of government transformation towards e-government for example, can we feel proud of Malaysia achievement? Malaysia has less than 10 years to achieve Vision 2020 towards a developed country. At this stage, the basic drive to put services online which are one (1) of the flagships' application should be approaching its limits. The e-government should now be an integral part of government services delivery (2005) and be in information age government where new technology being used. The government should be servicing citizens of more conveniences, accessible as well as with quality and not trail behind technology development.

In looking forward to building a knowledge-rich society, Malaysian government had initiated the Multimedia Super Corridor (MSC) in 1996. The MSC is to create a high-tech business corridor and assist Malaysia to become a fully developed nation by the year 2020. The implementation of the e-government indicates the beginning of a journey of reinventing the government by transforming the way it operates, modernizing and enhancing its service delivery (MSC, 1997). Since then, Malaysian citizens seem relatively aware of the online and other electronic services, and in fact eager to use those

new channels. However, the fact reflects the contrast as the electronic introduced by the government are suspected to be lower in acceptance in certain areas.

The awareness indeed could not ensure the successful of e-government as the usage is still considered low (Azman, 2012). The e-services with 35 per cent of online transactions and 10 per cent of paperless government are considered poor as the target would be between 70 to 90 per cent respectively in year 2012. As for the target achievement, the pushing boundaries' projects, e-government implementation is proposed to increase the accessibility, speed and transparency of government services through communication technology. The pushing boundaries project (e-government) created with a target to fully implement the key initiatives, *i.e.* e-counter services, paperless government and 1Malaysia account. The e-counter services are introduced to increase the accessibility of services with zero face-to-face transactions. The target is to have services available on all devices (kiosks, personal computer and mobile) at all locations (relative departments and post offices) and at all channel (government portals and SMEs). Paperless government is initiated to replace the paper archives with the digital. This would gradually eliminate the use of paper in various stages, meeting invitation, meeting minutes, presentation material, internal circulars as well as inter-ministries or -agency memos. The creation of unique official email accounts and ID is to ease all government related services. This value added services would speed the processing time of e-services engaged such as in e-*hasil*, EPF, license renewal, online bill payment and public record searches. In total, RM211 million had been allocated to this project which includes the

cost of maintenance, incremental storage, managed lifestyle, additional broadband subscription and mobile data as well as for kiosk connectivity and transaction fees (Azman, 2012). The huge amount of revenues put forward on the e-government projects could not be ignored. In fact, the transformation towards a fully e-government transaction should be supported by all public and private departments.

In tax e-filing specifically, the success is only in the employment income, but it is not the case of companies' income. In the era of the easiest and electronic access to information, despite the evolution of e-filing engaged by Inland Revenue Board (IRB) of Malaysia from year after year, yet surprisingly the statistic revealed by IRB pointed out an issue of low or unsatisfactory tax e-filing acceptability which required a serious discussion. This situation of underutilized the technology, despite the evolution requires some explanations. The evolutions made as improving the infrastructure and facilities to accommodate the electronic system had consume a huge amount in ensuring the successful of the system (Azman, 2012; IRB, 2009; John, 2010). The reported feedback on the usage of tax e-filing from active taxpayers is increasing from year after year. However, the main contributor is the individual taxpayers (87.25%) and not the company's taxpayers as reported by IRB in year 2013 that is 76 per cent (IRB, 2014). Clearly the level of usage which could not achieve 100 per cent, despite getting assistance from tax agents/preparers is problematic, not least because of huge investment had been made on technology yet not fully utilized (Al-Kibsi, De Boer, Mourshed & Rea, 2001; Azman, 2012; De Ruyter, Wetzels, & Kleijnen, 2000; IRB, 2014; John, 2010).

Nevertheless, it is never to say that other part is not good because some of the other parts have achieved 100 per cent of e-government. Malaysia with the help of Malaysian Administrative Modernization and Management Planning Unit (MAMPU) have successfully implemented the short message service (SMS) in checking information related to the selection on National Service Program; on traffic summonses from the Royal Malaysian Police (PDRM) as well as in verifying voting information. In addition to that, another public key infrastructure via MyID has been introduced which ease the citizens in transactions ranging from online tax filing to immigration checkpoints to toll payments using the identification card's number as sole reference number for all transactions. A number of innovative services using the digital certificate has been created including e-kiosk service initiated by Employees Provident Fund (EPF) Department in obtaining statements of accounts via self-service. The pioneer in this digital approval service is the National Registration Department with the use of MyID to access control at government departments and widely used by several other departments, which is to date cover almost 760 services provided by the public service agencies at the federal and state government levels (Yee, 2010).

The widely used of information and communications technology (ICT) in daily transactions is the sign of successful initiatives towards information age and government transformation programs among public with the assistance of electronic information and government. However, the low or unsatisfactory level of acceptability in electronic taxation raises important issues for any government and revenue collecting authority as it

impacts on both the equity and efficiency of the economy. This issue would certainly debate or questioned because electronic filing is claimed to be quick, easy and far less prone to error than traditional paper returns (Azman, 2012; Chu & Wu, 2008; Fu, Farn, & Chao, 2006; Hansford, Lymer, & Pilkington, 2006). It is very crucial to ensure the successfully adoption as any failures could in the long-term obstructs the process of modern governance (Accenture, 2002). Undeniable, the smooth government transformation programs would be jeopardizing as well (Portal, 2012; Razak, 2014). Thus, the question to ponder - Are we ready mentally in embracing the developed country in year 2020 if Malaysian does not in calculating in fully e-government and in this context tax e-filing?

1.1.1 Electronic government (E-government)

E-government is technically referring to the delivery of information and services online via the internet (Akman, Yazici, Mishra, & Arifoglu, 2005; Beynon-Davies, 2007; Ebrahim & Irani, 2005; EIU, 2003) and it is claimed to be cost saving and improve public satisfaction (Al-Mashari, 2007). E-government has become increasingly important to the aims at better and effective governance together with the significant benefits including the radically shrinking communications and information costs, improving connectivity, maximizing speed, broadening to reach, eradicating distance and encouraging participation of public in government (Akman et al., 2005; Aldrich, Bertot, & McClure, 2002; Byrne, Deng, & Martin, 2004; Irani, Eliman, & Jackson, 2007; Jaeger &

Thompson, 2003; WMRC, 2001). According to Banerjee and Chou (2004), e-government is to seem to be as a tool for the government to provide information, services and access in an electronically easiest way via personal computers, kiosks, telephones and other resources.

The initiatives of having such electronic information have been introduced worldwide into the early years in 1993 by the United States of America: Information superhighway updated with expanded electronic government 2001; followed by Malaysia: Electronic government in 1997; a year after by the United Kingdom: Information age government; in year 1999 by Canada: Government online; and in year 2000 by Singapore: E-government action plan (Accenture, 2002). These five (5) countries which are leading practices in e-government (Al-Mashari, 2007) have introduced their vision via the named vision title and targeted on the government departments.

1.1.2 E-Government in Malaysia

The idea of moving towards e-government in Malaysia as an alternative of the existing manual system started with the vision to be achieved in year 2020 to become a fully developed country. In rationalizing the vision, the Malaysian Government since then is spending more than RM211 million (Azman, 2012; Schware & Deane, 2003). The amount spends are to set up the Government Integrated Telecommunications Network (GITN) infrastructure which comprises a nationwide telecommunications frame relay and

a computing network built for the public sector. The phases and approaches of implementation have been designed in such a way from years to years until the nation could be transforming fully from industrial age to the information age in year 2000 onwards (Azman, 2012; MSC, 1997). The development of the total package taken into account the people, systems and the processes has contributed to the success of the e-government initiative.

The application of e-government in Malaysia is successfully realized the objective of moving beyond the mere computerization of government. The realization of the objective is through the re-invent in the Government and to catalyze the successful is with the development of the MSC (MSC, 1997). MSC is a 50-kilometer growth area with an eco-friendly environment designed to stimulate creativity and innovative in technology aimed for world-class ICT and multimedia companies (Accenture, 2005; Azman, 2012). This effort could contribute to Vision 2020 goal in becoming a fully developed nation. The vision for people in government, businesses and citizens working together for the benefit of Malaysia and all of its citizens is focusing on effectively and efficiently delivering services from the government to the public as well as enabling government to become more responsive to the needs of its public (MSC, 1997). Within the MSC program, a number of highly innovative initiatives have been launched, including the development of Cybercities: self-contained intelligent cities; public key infrastructure via MyKad applications-Employees Provident Fund and National Registration Department; MyGov portal in order to integrate the government services-e-*Tanah*, e-Consent, e-Filing, e-

Stamp, e-*Daftar*, e-Local Government, e-lodgement, e-info; and SMS for checking and conformation purposes-selection in the National Service Program, traffic summonses record with the PDRM, as well as retrieved on voting information. Unfortunately, the huge amount of investment in upgrading the technology is to seem to be wasted as there are certain operations not fully utilized the resources provided by the government. The evidence of low or unsatisfactory acceptance level in particular the e-filing system introduced by the IRB that is less than 20 per cent in year 2009 is one (1) of the example. At the last phase toward Vision 2020, Malaysia should be fully applying the technology. Hence, the big question mark of this point is how such situations could happen when the time for Malaysian government trying to achieve to the stage of developed nations is less than 10 years.

1.1.3 Electronic Filing in Malaysia (E-Filing)

The initiative of transforming the taxpayers to the information age has been actively carried out by the respective department, which in Malaysia the responsibility is lies on the IRB. E-filing is a form of electronic submission of return forms via internet. The functionality of the project is based on the Government to Community (G2C) initiatives. The aim of this alternative form of manual filing is to deliver services at higher level of conveniences, efficiency and effectiveness (IRB, 2009). However, the switching from returning completed return forms manually to file it electronically is rest on a taxpayer's voluntary usage of e-government service. Besides the e-filing, effort via internet

application has been implemented in other services such as e-payment, e-stamping, e-registration and e-revenue. The main objective of such implementation is to ease taxpayers to meet their normal tax obligations without visiting Income Tax Office (IRB, 2009).

The changing trend to electronic device instead of manual filing system could help the department in reducing the burden of checking and processing income tax return forms and issuance of refunds if any could be on a timely manner (IRB, 2009). Consequently, the usage of e-filing also facilitated and expedited the collection of taxes (Hee, 2009). Thus, the department could concentrate more on key administrative decisions on tax administration and compliance functions (Ojha, Sahu, & Gupta, 2009). The other utmost favorable benefits are costing effective with the total cost saving of RM6.88 per form; accurate with automatic tax calculation; easy and user-friendly (Chu & Wu, 2008; Filmer, 2008; IRB, 2009). Undeniably the system also secured with an assurance of secrecy validity and integrity via Public Key Infrastructure (PKI) and digital signature (IRB, 2009). In taking into account the cost and benefits as well as the effectiveness of e-filing, the e-filing system had been accepted and adopted in most countries. For instance in New York, the mandatory are begun in year 2005, Taiwan since 1998 and Malaysia in the year 2004.

1.1.4 E-Filing evolution in Malaysia

In ensuring the convenience in usage of e-filing, IRB had gone through the phase of introducing, improving and maintaining their system. This continues effort is to ensure taxpayers have no complaint and doubts on the technology in particular the tax e-filing. However, the last minutes attitudes which said to be as norms (IRB, 2009) and yet to be changed has created problems as well as dissatisfaction among the taxpayers in Malaysia. The following table shows the phases of e-filing introduced in a way to change the manual tax filing system.

Table 1.1
E-filing evolution from year 2000 until 2009

Application Year	Manual filing	e-Fill & e-Filing	PKI	Web Browser
2000 – 2004	- All types of forms - Issue form to taxpayer - Fill up and submit manually	-	-	-
2005	-	- B & BE Form (Excel format) - Download form - Fill in form electronically - Submit online or print and submit manually	· Download digital certificate · MyKad or iVest card	- Internet explorer
2006	-	- B & BE Form (PDF format) - Download form - Fill in PDF form - Submit online or print and submit manually	· Download digital certificate · MyKad · Soft Cert	- Internet explorer

Application	Manual filing	e-Fill & e-Filing	PKI	Web Browser
2007	-	- B & BE Form (web base) - Fill in form and submit online	· Download digital certificate · MyKad · Soft Cert	- Internet explorer
2008	-	- B,BE, & M Form (web base) - Fill in form and submit online - Tax Agent Module (TAeF)	· Roaming PKI	- Internet explorer - Mozilla Firefox - Safari
2009	-	- B, BE & M Form (web base) - Fill in form and submit online - TAeF - HK3 online	- Roaming PKI	- Internet explorer - Mozilla Firefox - Safari

Source: National Taxation Seminar 2009

The evolutions of e-filing since it was introduced into year 2004 have been progressively improved on years to years (Table 1.1). The manual filling system is changed to electronically; either printed out completed forms and send manually (e-filling) or completed and submitted the return form electronically (e-filing) to IRB. The changing of application method from manual to e-filing, also supported by the facilities improved in web browser. As stated in the table above, the e-filing system could be viewed not only via the Internet Explorer, but also other web application such as Mozilla Firefox and Safari. The evolutions also could evidence that huge budget have been put forward to

successfully installed, maintained and upgraded the systems (John, 2010). Unfortunately, it seems that not all categories of taxpayers willing to shift to the new system as revealed in the statistics (Table 1.2 and Table 1.3).

Table 1.2
Statistic on E-filing acceptance (in number of return and percentage of return)

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Form									
e-BE	0	165,714	613,140	988,153	1,236,880	1,403,219	1,593,025	1,861,548	2,058,395
(%)	0	10.25	37.04	54.05	63.49	69.71	76.07	81.81	87.25
e-B	-	23,022	91,483	120,613	223,329	255,224	310,517	391,584	455,694
(%)		2.25	9.12	18.62	34.92	40.19	48.69	60.48	67.38
e-M	-	-	-	2,784	6,298	7,691	10,568	15,090	17,683
(%)				16.04	33.98	39.01	51.11	60.27	66.01
e-P	-	-	-	10,508	25,002	31,782	43,299	57,043	67,333
(%)				11.80	27.39	33.91	45.32	57.42	65.51
e-E	-	-	-	181	14,750	26,582	42,215	57,567	70,646
(%)				0.08	5.72	9.64	15.26	23.30	29.52
e-C	1	298	3,772	2,312	47,564	101,245	134,713	175,682	208,430
(%)	0.01	0.19	2.51	1.41	19.98	46.07	55.46	67.88	76.06

Source: Statistic from IRB, 2014

Notes:
- e-BE : Individual with employment income
- e-B : Individual with business income
- e-M (*) : Non-resident individual (e-filing is introduced in year 2008)
- e-P : Partnership
- e-E : Employer
- e-C : Company with company income

The statistic shows the percentage of tax e-filing usage (Table 1.2) as compared to the total tax agents/preparers in the respective years (Table 1.3). The total individual taxpayers with having employment income that accepted the new system in year 2009 is 63.49 per cent as compared to the other groups of income. This group of taxpayers is the main contributor in e-filing acceptability. In year 2013, the reported percentage is increasing and achieve to 87.25 which means almost 87 per cent of individual with employment income fill and submit their return form online. The returns from active

corporate taxpayers reflect the resistance toward the system even with the help of tax agents/preparers, the contribution is less than 20 per cent in that particular year (*i.e.* 2009). Undeniable the acceptance among e-filing usage increases from years to years and in year 2013 the percentage increase to 76.06 per cent. However, the corporate taxpayers failed to achieve 100 per cent even though almost 99 per cent of them required assistance from tax agents/preparers. Indeed, the lowest percentage of return on e-filing acceptance is from employers (*i.e.* 5.72%) in year 2009. Even though the acceptance level is improved and achieved to 29.52 per cent in year 2013, still the reported figure is the lowest percentage of return compared to the other group of taxpayers. However, study on this group of tax e-filing user is ignored. It is simply because the usage or tax e-filing application is still at early stage with the introduction of the system in year 2008. Whereas, the corporate and individual tax e-filing system that has been implemented since year 2004. Obviously, the trend of usage could not be examined effectively as at year 2009, the introduction of tax e-filing to corporate and individual taxpayers is almost six (6) years and for the employers it is in the second year. Statistically, the comparison would not be successfully because trend analysis required comparison of the same item over a significantly long period of time. The detection of general pattern on a relationship between associated factors or variables could be done and be able to project the future direction of the pattern adequately and properly (Zikmund et al., 2010).

Table 1.3
Statistic on total active taxpayer (in number of return)

Year / Form	2005	2006	2007	2008	2009
e-BE	1,685,625	1,617,424	1,655,554	1,828,114	1,948,015
e-B	1,066,622	1,023,411	1,003,223	647,880	639,555
e-M	14,270	14,894	17,640	17,361	18,535
e-P	83,304	82,873	93,967	89,087	91,276
e-E	207,852	217,751	227,699	232,085	257,940
e-C	19,581	154,902	150,300	164,086	238,099
Total	**3,077,254**	**3,111,255**	**3,148,383**	**2,978,613**	**3,193,420**

Year / Form	2010	2011	2012	2013
e-BE	2,012,816	2,094,031	2,275,535	2,359,100
e-B	635,029	637,750	647,430	676,345
e-M	19,715	20,677	25,039	26,789
e-P	93,735	95,542	99,347	102,786
e-E	275,728	276,647	247,043	239,323
e-C	219,742	242,920	258,821	274,039
Total	**3,256,765**	**3,367,567**	**3,553,215**	**3,678,382**

Source: Statistic from IRB, 2014

Notes:
- e-BE : Individual with employment income
- e-B : Individual with business income
- e-M (*) : Non-resident individual (e-filing is introduced in year 2008)
- e-P : Partnership
- e-E : Employer
- e-C : Company with company income

1.2 Problem Statement

Malaysian government is spending millions of Ringgit through various agencies including Inland Revenue in pursuing the national agenda of e-government. Although in some part of the government transactions the e-government is considered successful, the e-filing in taxation amongst corporate taxpayers and tax agents/preparers turn out to be

sour (John, 2010). The tax e-filing was meant to enhance the quality of life of the nation by reducing the time taken in the hectic of tedious documentation and recordkeeping for tax purposes. However, since the introduction of tax e-filing in the year of 2004 less than 76 per cent (Table 1.2) is involved in the usage of tax e-filing. This outcome cannot be taken lightly since almost all the corporate taxpayers seek assistance from tax agents/preparers. There must be some explanations on why such situations happen. Despite all the development toward a better, improve and easier electronic filing system, it remained unaccepted by the citizens and seriously underused in spite of the availability of the system. Thus, there is desperately a need to understand the determinants of tax e-filing acceptability. Even though many studies are conducted in searching for the answer, yet the problem of low tax e-filing acceptability is still lacking in the literature.

Why sour? What went wrong? And how could the government improve such situations? These are the key questions which need to be addressed that have no comprehensive empirical answer untill today. The major factor of low/unsatisfactory acceptance due to low/unsatisfactory acceptability of tax e-filing could be the implication of low/unsatisfactory tax e-filing usage indirectly. In fact, there is still lacking in the literature review on the issue of low/unsatisfactory acceptability among tax agents/preparers. Although many study engaged in the topic of e-filing, as far as concerned in Malaysia, the focus are on individual taxpayers (Illias, Razak, & Yasoa', 2009; Manaf, Ishak, & Warif, 2010; Ramayah, Yusoff, Jamaludin, & Ibrahim, 2009) and not many study on tax agents/preparers (Lai, Obid, & Meera, 2004). However, irrefutable

the focus on the e-filing studies is in Taiwan (Chang, Li, Hung, & Hwang, 2005; Chu & Wu, 2008; Hung, Chang, & Yu, 2006) after the country is ranked as number one (1) in year 2002 in providing citizens and organizations with convenience access of Electronic Filing of Personal Income Tax (eTax) (Darrell, 2003). In addition, there are also studies in other countries like Turkey (Ozgen & Turan, 2007), India (Ojha et al., 2009) and United States (Angel & Pandit, 2006; Anonymous, 2008a, 2008b; Gallant, Culnan, & McLoughlin, 2007; Gara, Karim, & Pinsker, 2005; Hansford et al., 2006; Pant, Stiner, & Wagner, 2004; Rubenfield & Pandit, 2003). The question on factors of adoption or usage has been explored quite in an extensive area since then. In spite of all the research carried out, yet the gap remained unanswered and required for further exploration. There should be some explanations for the acceptance or rejection of tax e-filing phenomena among Malaysian corporate taxpayers with the assistance from tax agents/preparers.

Tax agents/preparers' inclination to engage in tax e-filing and their willingness to accept the technology introduced, in particular, could be due to various factors. However, an absent or lacking of the salient factors could contribute to the reluctant in accepting the technology. Although the existing model of UTAUT can explain partially the low/unsatisfactory tax e-filing acceptability, yet the explanation is not conclusive or sufficient to cover the situation in Malaysia. Accordingly, besides the Unified Theory of Acceptance and Use of Technology's (UTAUT) established variables, there are other variables such as perceived value, volume of transaction, design characteristics, user participation, incentive alignment, training as well as organization and peer supports.

These new variables are believed to have impact or have a good role to explain the recent phenomena.

1.3 Research Question

This research would endeavor to bridge the gap between technology assistance and acceptance among tax agents/preparers. Although a wide variety of factors has been identified with influential in Information Technology (IT) acceptance, little is known about the relative influence of each of these factors on tax agents/preparers' acceptance, particularly, in the area of taxation. Thus, the main question on this study is how could we explain such gaps? As indicated by the IRB, the electronically actual return rate of company taxpayers and tax agents/preparers compared to individual taxpayers is relatively low which less than 20 per cent in year 2009 (Table 1.2). Thus, this research attempt to develop further understanding on the key questions that have no comprehensive empirical answer until today: the major factor of low/unsatisfactory acceptance due to low/unsatisfactory tax e-filing acceptability.

The question could be addressed by studying on the followings:

1. What is the level of acceptance of tax e-filing among Malaysian tax agents/preparers?
2. What are the determinants of tax e-filing acceptability?
3. How the factors identified in two (2) are related to tax e-filing acceptability?

1.4 Research Objectives

The main objective of this study is to gain understanding on the gap existed on the e-filing among the tax agents/preparers. In seeking the imperative answers, give the large investment had been putting forward in ensuring the success of e-filing in Malaysia and yet to see the acceptability. Hence, this research is designing for the following objectives:

1. to determine the level of acceptance of tax e-filing among Malaysian tax agents/preparers;
2. to identify the determinants of tax e-filing acceptability; and
3. to examine how the factors identified in two (2) are related to tax e-filing acceptability.

1.5 Significant of Study

This research contributes to the body of knowledge by empirically:

1. Investigate and tests an existing information system theory in a new IT context, *i.e.* tax e-filing; and
2. Extend or enhance our understanding of the determinant of e-filing acceptability.

Besides the implication to the theory, the management policy of government policy makers, government agencies and system designers also could be benefited. The results and discussion would provide empirical support of the reasons behind the resistant to accept the technology introduced.

1.6 Scope and Assumption of Study

1.6.1 Scope

This study is conducted within the scope of registered tax agents/preparers in Malaysia. This is based on the fact that in Malaysia almost 99 per cent of companies completed and submitted the tax return form with the help of tax agents/preparers (John, 2010).

In addition to that, the study also focuses on companies taxpayers that filing in C return forms. The focus is made due to the low tax e-filing acceptability is mainly from this group of taxpayers.

1.6.2 Assumption

In addition to the scope, this study is based on several assumptions:

1. Tax agents/preparers are assumed to know and understand about e-filing.
2. Respondents are assumed to understand the questions listed.
3. All of the questions on the questionnaires are assumed to be answered freely without bias, not influences by any parties and not copying.
4. Samples of the study are assumed to be sufficient to represent the population.
5. The validity and reliability of the instruments are assumed to be consistent as the output from a pilot study.

1.7 Thesis Arrangement

The following chapter reviews the literature to explore the theoretical foundations of the proposed research model and hypotheses. In chapter three (3), a research model is constructed and developed based on the prior literature as well as describes the methodology used to empirically test the model. Then, the results are presented in chapter four (4). The discussion of the findings, future research ideas, limitations as well as conclusion is presented in the final chapter (Chapter 5).

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter is begun with the theoretical assumption on tax compliance. It is basically to give an idea how willingness to cooperate could have impact on tax compliance. The explanation then, is heading to the history and chronology of technology acceptance models especially closely related to the proposed integrated technology acceptance model for e-filing. The proposed model - UTAUT, originally incorporated eight (8) previous informative models such as Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), TAM2, Motivational Model (MM), Theory of Planned Behavior (TPB) and Decomposed Theory of Planned Behavior (DTPB), Combined TAM-TPB (C-TAM-TPB), Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT) and Social Cognitive Theory (SCT). The details of those models together with the proposed integrated model (extension of UTAUT model) are discussed in this chapter. In addition, the latest TAM3 model is shared too in order to have an idea on the model. An extensive review of the literature associated with each model is presented. A brief criticism and limitation of the previous models is also revealed. The theoretical assumptions of technology acceptance, the variables related and introduced, as well as the widely used models related to this study are discussed too. Towards the end of this chapter, example of factors or variables as well as moderators that could be split off into new factors,

collapse into existing factors or to form a new factor are also included and discussed. This sequence leads to chapter three (3) on a model creation for this particular study based on the literature discussed in this chapter. The following chapter is discussed the research methodology that applicable to this research.

2.2 Theoretical Assumptions on Tax Compliance

Tax compliance issue is debated seriously in the societies and economic systems. It is trigger from the traditional economic theory which concern on the rational and irrational behavior (Becker, 1962). It is an economist's approach where analysis of choice guides the rational behavior. The rational behavior is referring to consistent maximization of a well-ordered function, *i.e.* a utility or profit function. However, offense or irrational happened when the expected utility is exceed the utility achieved using the availability of time and resources. Hence, it is undeniable that the economic theory is most compatible with the irrational behavior (Becker, 1962). This includes in the reaction of market to the individual firms and households. Basically, the consumption opportunities of households are limited to the income availability. The production opportunities of firms are limited to the profits or profit plus any additional sources of income if available. The opportunities to respond rationally, unarguable could be forced by the irrational behavior (Becker, 1962). For instance, the households would have reduced in demand if price of one (1) commodity increase that creates or increase an opportunity to purchase on other

commodity. In other words, the irrational behavior based on the current choice is simply determined and influenced by past action as well as opportunities available.

2.2.1 Theory of Collusion

The reaction of rational and irrational behavior (*i.e.* the Irrational Behavior and Economic Theory) had driven toward an optimal and relevant enforcement. The issue is to create a suitable nature of punishment of criminal behavior within the economic approach (*i.e.* the analysis of choice). Principally, it is assumed that one would most probably commit into crime if the expected utility is exceed the received utility (Becker, 1968). The criminal behavior will then be supported with several initiatives or certain kinds of behavior to avoid the punishment. Thus, the approach of crime and punishment is a theory of collusion that applied to an effort of behavior either lawful or otherwise. The collusion action is determined from the relationship of marginal cost and demand. It is considered violating the collusion arrangement and committing an offense if pricing is below or producing more than the specified (Becker, 1968). Thus, in detecting the violation of collusion arrangement, it depends on the number of firms; on the number of customers; on the stability of customer buying patterns; and on government policies toward collusion arrangements (Becker, 1968). The penalty to the collusion violators is fines. Therefore, firms in a collusion is most likely to choose probabilities of detection; punishments to violators; and prices and outputs that minimize their loss from violations, which at the same time is maximize their gain from colluding, but subject to legislation. Thus,

success in the country where violators could be legally prosecuted and highly enforcing on tax compliance approach.

2.2.2 Fischer Tax Compliance Model

The international concern on tax compliance is growing among tax authorities and public policy makers. The issue has been a major area of research over the past years. In fact, the Fischer Tax Compliance Model has been reviewed extensively since then. It is basically to understand the influence of the socio-economic and psychological components on taxpayers' compliance decision. The original model (Figure 2.1) studied on the determinants of demographic (*i.e.* age, gender and education); noncompliance opportunity (*i.e.* income level, income source and occupation); attitudes and perceptions (*i.e.* fairness of the tax system and peer influence); and tax system/structure (*i.e.* complexity of the tax system, probability of detection and penalties, and tax rates (Fischer, Wartick, & Mark, 1992).

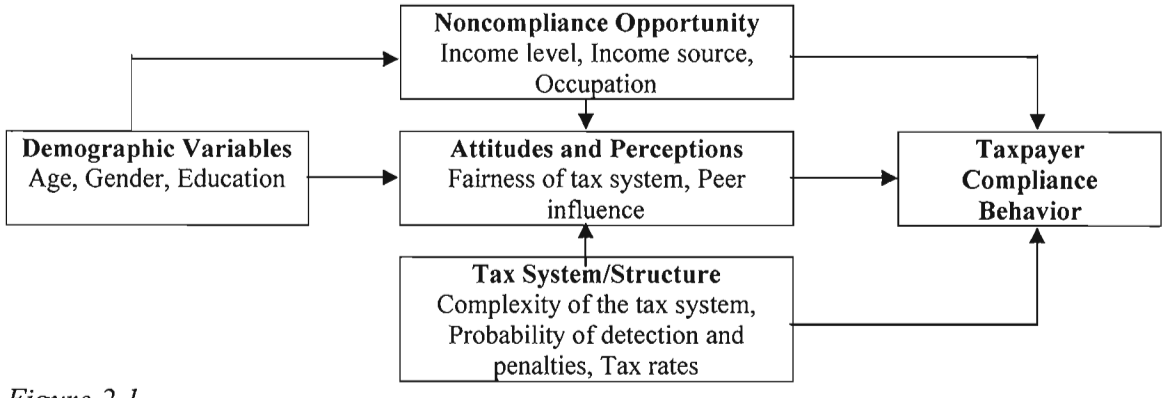

Figure 2.1
The Fisher Tax Compliance Model
Source: Fischer, C. M., Wartick, M., & Mark, M. (1992). Detection Probability and Taxpayer Compliance: A Review of the Literature. *Journal of Accounting Literature, 11*, 1-46.

Demographically, the variables are found to be having indirect relationship with taxpayer compliance that gives impact on noncompliance opportunity as well as attitudes and perceptions. In the aspect of tax compliance, old taxpayers (*i.e.* age 65 and above) is most likely have no problem compared to young taxpayers. This is because the youngsters more willing to take risks and were tax evaders (Ritsema, Thomas, & Ferrier, 2003). In terms of gender, females are more likely tax compliance. They are reported to be identified with conforming roles, moral restraints and more conservative life pattern (Baldry, 1987; Jackson & Milliron, 1986). In the ability to comprehend and comply or not with the tax laws, those with more fiscal knowledge and with tertiary education background had more positive tax ethics (Chan, Troutman, & O'Bryan, 2000; Eriksen & Fallan, 1996; Houston & Tran, 2001; Richardson, 2006). In addition, the tax non-compliance opportunity is directly related to tax compliance behavior via income level, income source and occupation. Taxpayers with an improvement in income status are more likely to commit tax evasion (Andreoni, Erard, & Feinstein, 1998; Vogel, 1974). The lower income group on the other hand, tends to manipulate by under-reporting income and over-claiming expenses (Houston & Tran, 2001). The opportunity to not comply with tax is most likely within the group of self-employed taxpayers and on income not subject to withholding tax (Aitken & Bonneville, 1980; Fjeldstad & Semboja, 2001; Groenland & Veldhoven, 1983; Houston & Tran, 2001; Richardson, 2006; Vogel, 1974). In terms of occupation, it is referring to an individual's employment or earnings activity. Most of tax evasion (*i.e.* understated taxes by the greatest percentage) is among an individual of respectability and high social status as well as sole proprietors with fixed

locations of sales earning (*e.g.* car dealerships, stores, restaurants) (Andreoni et al., 1998; Jackson & Milliron, 1986). In avoiding tax non-compliance, the Fischer Model had considered the fairness of the tax system and peer influence. This is mostly because the attitudes to comply depend on the perceptions of taxpayers on the fairness of the system. If the system is perceived as unfair, is more likely taxpayers to commit tax noncompliance behavior (Grasmick & Scott, 1982). Hence, in ensuring tax compliance, more knowledge is needed in order to improve the perception of the fairness (Eriksen & Fallan, 1996). Whereas, the peer influence is reflected in an individual's expectation on the approval of the noncompliance (Chan et al., 2000; Grasmick & Scott, 1982). This noncompliance practice is considered as approved if it is consistent with in-group expectations and norms. The effectiveness of tax system or structure could reduce the possibility to commit non-compliance. However, if the system is too complex, then it is associated with higher underreporting of tax which means higher in tax evasion (Jackson & Milliron, 1986; Milliron, 1985; Richardson, 2006). Besides that, if the probability of detection is low, then taxpayers tend to commit crime (Massimo, 1993). The same concept applied if taxpayers perceived on fear of penalties is low (Allingham & Sandmo, 1972; Grasmick & Scott, 1982; Witte & Woodbury, 1985). Hence, with some non-zero probability of being caught and increasing on the effectiveness of penalties imposed, the tax compliance most likely to be increased (Alm, Jackson, & Mckee, 2004; Massimo, 1993). The other major concern on tax system or structure is on the tax rates (e.g. progressive and flat tax rate). Generally, increasing of tax non-compliance is associated

with high tax rates (Alm, Bahl, & Murray, 1993; Clotfelter, 1983; Friedland, Maital, & Rutenberg, 1978; Hanefah, 1996).

The above-mentioned theories have been extended and modified extensively in the previous years. The extension includes an additional determinant introduced in order to study on the effect of environment factor, *i.e.* culture (Blanthorne & Kaplan, 2008; Chau & Leung, 2009). Alabede (2012) incorporate perceived tax service quality, public governance quality and ethnic diversity in investigating the factor influencing taxpayers' compliance behavior in Nigeria. The study also determines the relationship of compliance behavior with race, religion and financial condition. Undeniable, taxpayers' perception towards assessment system, tax law fairness as well as tax law complexity are the important factors in ensuring the successful of any tax systems (Hanefah, 1996). Indirectly, if the assessment system is perceived as fair and less complexity with acceptable tax rates, the tax system is accepted which most likely increase the compliance behavior. Hence, changing the irrational or non-compliance tax behavior is most likely requires some changes in the structural tax system. Obviously, the electronic data storage and transfer is a way to reduce the irrational behavior. The following section is discussed on the technology acceptance aspect whereby few determinants are suggested for further consideration.

2.3 Theoretical Assumptions on Technology Acceptance

Taxpayer's motivation to file tax return on time and correctly highly depends on their willingness to cooperate (Kirchler, Niemirowski, & Wearing, 2006). Indeed, willingness to cooperate is considered self-reported intent to file the tax return timely and correctly and in this case to file them via e-filing technology. Even though there are differences between tax official's and taxpayer's view, but with the willingness to cooperate, taxpayer is most likely tried to comply with the spirit of law. Thus, if taxpayers' perceived they are treated fairly; reasonable; rules and decisions are clearly explained; reliable information on questions and solutions provided, the willingness to cooperate is automatically increased. This is supported by The Compliance Model (Braithwaite, 2003a, 2003b) where supportive relationship from tax officers is the pushing factor for taxpayers to comply with the rules, regulations and procedures outlines by the tax authorities. In fact, the willingness to cooperate is found to be substantial even though the effect is quite small (Kirchler, Hoelzl, & Wahl, 2008) in determine the observed actual behavior. According to the tax psychology, it is agreed that the actual behavior is divergent from the behavior intentions (Hessing, Elffers & Weigel, 1988; Webley et al., 1991). At this point, it is quite necessary to prioritize on the intention of tax e-filing acceptability when the fact revealed the actual behavior was not as expected. In line with this, Kirchler et al. (2006) in some part stressed on the important of mutual understanding between tax officers and taxpayers. Achieving the mutual understanding could indirectly lead to willingness to cooperate. Thus, enable the tax authority to communicate and

provide requested support more effectively and smoothly. Hence, the factors to arrive at and achieve for the mutual understanding in accepting the tax e-filing technology and willingness to cooperate is expected to be revealed in this study.

2.3.1 Technology Acceptance

Technology acceptance is crucial determinant in knowing the level of technology usage. Fu et al. (2006) defined technology acceptance as an individual's psychological state with regard to his or her voluntary, intended use of a technology. User acceptance and usage behavior has been examined using several models (Table 2.1). The original models whereby adapted from the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) has created several keys competing models. The models development included Technology Acceptance Model (TAM) (Davis, 1986); TAM2 (Venkatesh, 2000; Venkatesh & Davis, 2000); TAM3 (Venkatesh & Bala, 2008); Motivational Model (MM) (Davis, Bagozzi, & Warshaw, 1992); Theory of Planned Behavior (TPB) (Ajzen, 1991); Decomposed TPB (DTPB) (Mathieson, 1991; Taylor & Todd, 1995b); Combined TAM-TPB (C-TAM-TPB) (Taylor & Todd, 1995b); Model of PC Utilization (MPCU) (Thompson, Higgins, & Howell, 1991); Innovation Diffusion Theory (IDT) (Moore & Benbasat, 1991) and Social Cognitive Theory (SCT) (Compeau & Higgins, 1995a, 1995b). Despite the various results demonstrated by each of the theories with and without the effect of moderators, the information system researchers considered TAM offers a powerful and parsimonious explanation for user acceptance and

usage behavior (Lucas & Spitler, 1999; Venkatesh & Davis, 2000; Venkatesh & Morris, 2000). However, as research further explored, TAM required for future extension, modification and changes in order to be more comprehensive (Lee, Kozar, & Larsen, 2003).

Table 2.1
Models and theories of individual acceptance

Theories	Core constructs	Definitions
Theory of Reasoned Action (TRA) Drawn from social psychology, TRA is one of the most fundamental and influential theories of human behavior. It has been used to predict a wide range of behaviors (see Sheppard et al. 1988 for a review). Davis et al. (1989) applied TRA to individual acceptance of technology and found that the variance explained was largely consistent with studies that had employed TRA in the context of other behaviors.	Attitude Toward Behavior	"an individual's positive or negative feelings (evaluative affect) about performing the target behavior" (Fishbein and Ajzen, 1975, p.216)
	Subjective Norm	"the person's perception that most people who are important to him think he should or should not perform the behavior in question" (Fisbein and Ajzen, 1975, p.302)
Technology Acceptance Model (TAM) TAM is tailored to IS context and was designed to predict information technology acceptance and usage on the job. Unlike TRA, the final conceptualization of TAM excludes the attitude construct in order to better explain intention parsimoniously. TAM2 extended TAM by including subjective norm as an additional predictor of intention in the case if mandatory settings (Venkatesh and Davis, 2000). TAM has been widely applied to a diverse set of technologies and users.	Perceived Usefulness	"the degree to a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p.320)
	Perceived Ease of Use	"the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p.320)
	Subjective Norm	Adapted from TRA/TPB. Included in TAM2 only.
Motivational Model (MM) A significant body of research in psychology has supported general motivation theory as an explanation for behavior. Several studies have	Extrinsic Motivation	The perception that users will want to perform an activity "because it is perceived to be instrumental in achieving valued

Table 2.1 (Continued)

Theories	Core constructs	Definitions
examined motivational theory and adapted it for specific contexts. Vallerand (1997) presents an excellent review of the fundamental tenets of this theoretical base. Within the information systems domain, Davis et al. (1992) applied motivational theory to understand new technology adoption and use (see also Venkatesh and Speier, 1999).		outcomes that are distinct from the activity itself, such as improved job performance, pay or promotions" (Davis et al., 1992, p.1112).
	Intrinsic Motivation	The perception that users will want to perform an activity "for no apparent reinforcement other than the process of performing the activity per se" (Davis et al., 1992, p.1112).
Theory of Planned Behavior (TPB) TPB extended TRA by adding the construct of perceived behavioral control. In TPB, perceived behavioral control is theorized to be an additional determinant of intention and behavior. Ajzen (1991) presented a review of several studies that successfully used TPB to predict intention and behavior in a wide variety of settings. TPB has been successfully applied to the understanding of individual acceptance and usage of many different technologies (Harrison et al., 1997; Mathieson, 1991; Taylor and Todd, 1995b). A related model is the Decomposed Theory of Planned Behavior (DTPB). In terms of predicting intention, DTPB is identical to TPB. In contrast to TPB but similar to TAM, DTPB "decomposes" attitude, subjective norm and perceived behavioral control into it's the underlying belief structure within technology adoption contexts.	Attitude Toward Behavior	Adapted from TRA
	Subjective Norm	Adapted from TRA
	Perceived Behavioral Control	"the perceived ease of difficulty of performing the behavior" (Ajzen, 1991, p.188). In the context of IS research, "perceptions of internal and external constraints on behavior" (Taylor and Todd, 1995b, p.149).
Combined TAM and TPB (C-TAM-TPB) This model combines the predictors of TPB with perceived usefulness from TAM to provide a hybrid model (Taylor and Todd, 1995a).	Attitude Toward Behavior	Adapted from TRA/TPB
	Subjective Norm	Adapted from TRA/TPB
	Perceived Behavioral Control	Adapted from TRA/TPB

Table 2.1(Continued)

Theories	Core constructs	Definitions
	Perceived Usefulness	Adapted from TAM
Model PC Utilization (MPCU) Derived largely from Triandis' (1977) theory of human behavior, this model presents a competing perspective to that proposed by TRA and TPB. Thompson et al. (1991) adapted and refined Triandis' model for IS contexts and used the model to predict PC utilization. However, the nature of the model makes it particularly suited to predict individual acceptance and use of a range of information technologies. Thompson et al. (1991) sought to predict usage behavior rather than intention; however, in keeping with the theory's roots, the current research will examine the effect of these determinants on intention. Also, such an examination is important to ensure a fair comparison of the different models	Job-fit	"The extent to which an individual believes that using [a technology] can enhance the performance of his or her job" (Thompson et al., 1991, p.129).
	Complexity	Based on Rogers and Shoemaker (1971), "the degree to which an innovation is perceived as relatively difficult to understand and use" (Thompson et al., 1991, p.128).
	Long-term Consequences	"Outcomes that have a pay-off in the future" (Thompson et al., 1991, p.129).
	Affect Towards Use	Based on Triandis, affect toward use is "feelings of joy, elation, or pleasure, or depression, disgust, displeasure or hate associated by an individual with a particular act" (Thompson et al., 1991, p.127).
	Social Factors	Derived from Triandis, social factors are "the individual's internalization of the reference group's subjective culture and specific interpersonal agreements that the individual has made with others, in specific social situations" (Thompson et al., 1991, p.126).
	Facilitating Conditions	Objective factors in the environment that observers agree make an act easy to accomplish. For example, returning items purchased online is facilitated when no fee is charged to return the item. In an IS context, "provision of support for users of PCs may be one type of facilitating condition that can

Table 2.1(Continued)

Theories	Core constructs	Definitions
		influence system utilization" (Thompson et al., 1991, p.129).
Innovation Diffusion Theory (IDT) Grounded in sociology, IDT (Rogers, 1995) has been used since the 1960s to study a variety of innovations, ranging from agricultural tools to organizational innovation (Tomatzky and Klein, 1982). Within information systems, Moore and Benbasat (1991) adapter the characteristics of innovations presented in Rogers and refined a set of constructs that could be used to study individual technology acceptance. Moore and Benbasat (1991) found support for the predictive validity of these innovation characteristics (see also Agarwal and Prasad, 1997; 1998; Karahanna et al., 1999; Plouffe et al., 2001).	Relative Advantage	"The degree to which an innovation is perceived as being better than its precursor" (Moore and Benbasat, 1991, p.195).
	Ease of Use	"The degree to which an innovation is perceived as being difficult to use" (Moore and Benbasat, 1991, p.195).
	Image	"The degree to which use of an innovation is perceived to enhance one's image or status in one's social system" (Moore and Benbasat, 1991, p.195).
	Visibility	The degree to which one can see others using the system in the organization (adapted from Moore and Benbasat, 1991).
	Compatibility	"The degree to which an innovation is perceived as being consistent with the existing values, needs and past experiences of potential adopters" (Moore and Benbasat, 1991, p.195).
	Results Demonstrability	"The tangibility of the results of using the innovation including their observability and communicability" (Moore and Benbasat, 1991, p.203).
	Voluntariness of Use	"The degree to which use of the innovation is perceived as being voluntary, or of free will" (Moore and Benbasat, 1991, p.195).

Table 2.1(Continued)

Theories	Core constructs	Definitions
Social Cognitive Theory (SCT) One of the most powerful theories of human behavior is social cognitive theory (see Bandura, 1986). Compeau and Higgins (1995b) applied and extended SCT to the context of computer utilization (see also Compeau et al., 1999); while Compeau and Higgins (1995b) also exployed SCT, it was to study performance and thus is outside the goal of the current research. Compeau and Higgins' (1995b) model studied computer use but the nature of the model and the underlying theory allow it to be extended to acceptance and use of information technology in general. The original model of Compeau and Higgins (1995b) used usage as a dependent variable but in keeping with the spirit of predicting individual acceptance, we will examine the predictive validity of the model in the context of intention and usage to allow a fair comparison of the models.	Outcome Expectations-Performance	The performance-related consequences of the behavior. Specifically, performance expectations deal with job-related outcomes (Compeau and Higgins, 1995b).
	Outcome Expectations-Personal	The personal consequences of the behavior. Specifically, personal expectations deal with the individual esteem and sense of accomplishment (Compeau and Higgins, 1995b).
	Self-efficacy	Judgment of one's ability to use a technology (e.g. computer) to accomplish a particular job or task.
	Affect	An individual's liking for a particular behavior (e.g. computer use).
	Anxiety	Evoking anxious or emotional reactions when it comes to performing a behavior (e.g. using a computer).

Source: Venkatesh et al. (2003)

2.3.2 Theory of Reasoned Action (TRA)

Theory of Reasoned Action (TRA) (Figure 2.2) posits that individual behavior is driven by behavioral intentions. This fact is generally the best starting point revealed by Fishbein and Ajzen (1975) in exploring individuals' intention. This theory is claimed to be too general in explaining the relationship between attitudes, subjective norm, behavioral intention and actual behavior (Davis, 1986; Gentry & Calantone, 2002) compared to TAM as well as volitional compared to TPB (Ajzen, 1991; Gentry &

Calantone, 2002). Basically TRA's proposition is almost as the theory of hierarchy (Ajzen, 1991; Bidin, Idris, & Shamsudin, 2009; Davis, 1989; Lu, Yu, Liu, & Yao, 2003; Mathieson, 1991) where both theories emphasized the attitudes that influence by the belief system which then push the intention towards a positive or negative action behavior.

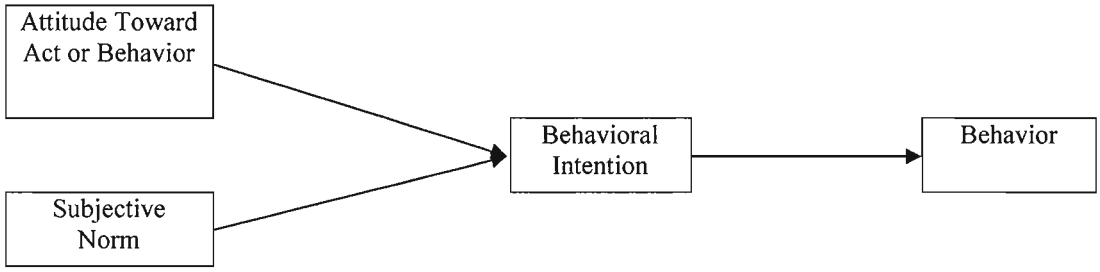

Figure 2.2
Theory of Reasoned Action
Source: Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intentions and Behavior: An Introduction to Theory and Research.* Boston: Addison-Wesley.

TRA model in many situations is successfully replaced by TAM with the measurement of attitude via ease of use and usefulness. This is due to the limitations in TRA including not clear barriers between attitude and norms since attitudes could often be reframed as norms and vice versa. Apart from that, lack of substantial control over the target behavior is another limitation with the assumption that when intention to act is formed, the act is freely executed without any limitations or constrains (Awa, Nwibere, & Inyang, 2010; Bagozzi, Davis, & Warshaw, 1992; Chau & Hu, 2001; Dharmmesta, 2002). In reality and practice, the constraints such as limited ability, time, environment or organizational limits, unconscious habits need to be considered. Indeed, limiting the freedom to act are the fact that could not be ignored (Bagozzi et al., 1992).

2.3.3 Technology Acceptance Model (TAM)

TAM originally proposed by Davis (1986) (Figure 2.3) is among the favorable model to be tested due to its simplicity, intuitive and easy (Lee et al., 2003; Mathieson, 1991). Since then, the information system (IS) community considered TAM as the parsimonious and powerful theory which has received more than 698 journal citation (Lee et al., 2003) and yet still expending until today. The continuous progress of TAM is recognized with the incorporation of other theoretical models, introduction of new external variables (Venkatesh & Davis, 2000) and intervening variables (Venkatesh & Bala, 2008). In the effort to rich the findings, TAM is explored in different IS environment's systems such as communication system (Karahanna & Limayem, 2000; Karahanna & Straub, 1999; Kwon & Chidambaram, 2000; Straub, 1994; Subramanian, 1994), general purpose system (Agarwal & Prasad, 1999; Gefen & Straub, 2000; Igbaria & Livari, 1995; Karahanna & Straub, 1999; Lou, Lou, & Strong, 2000; Lucas & Spitler, 1999, 2000; Taylor & Todd, 1995b), office system (Adam, Nelson, & Todd, 1992; Doll, Hendrickson, & Deng, 1998; Lou et al., 2000; Mathieson, 1991; Szajna, 1994; Venkatesh & Davis, 1996) and specialized business system (Gefen & Straub, 2000; Lu, Yu, & Lu, 2001); in different tasks which are voluntary or mandatory situations (Venkatesh, 2000; Venkatesh & Davis, 2000); as well as in different subjects including students and knowledge workers (Lee et al., 2003).

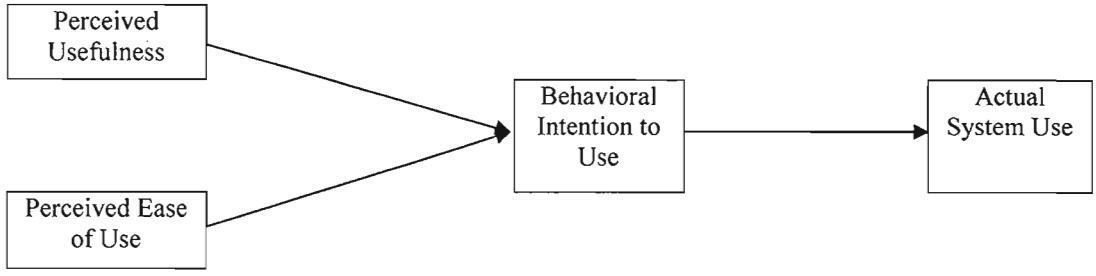

Figure 2.3
Technology Acceptance Model
Source: Davis, F. D. (1986). *Technology Acceptance Model for Empirically Testing New End-user Information Technology.* Unpublished Doctoral Dissertation, MIT.

The chronological progress of TAM research separated into four (4) main phases: introduction, validation, extension and elaboration has been carried out (Lee et al., 2003). This is purposely to trace in a systematic manner the history, findings, limitation and future gaps in a theory that is claimed to be parsimonious and powerful (Chuttur, 2009; Lucas & Spitler, 1999; Venkatesh, 2000). In the introduction phase, TAM is found to be a much simpler, easier to use and more powerful model in determining the user acceptance of technology compared to TRA (Davis, Bagozzi, & Warshaw, 1989; Igbaria, Guimaraes, & Davis, 1995). This simplicity become a drawback to the theory as it is criticized for not being practically well served the practitioners in a complex situation (Bagozzi, 2007; Chuttur, 2009; Lee et al., 2003). Moreover, attention on the role of technology and design using TAM also is reduced due to its narrow focus. It is claimed that there are areas or environment being neglected in conducting TAM's studies such as multi-user systems, team-level IS acceptance and even in more complex technologies (Lee et al., 2003; Venkatesh, 1999a). Indeed, there are broader environments yet to be

explored by TAM including emotion, habit, personality difference, technology change, even going beyond individual acceptance to organizational and societal acceptance (Lee et al., 2003; Taylor & Todd, 1995a). Undoubtedly, in terms of validation, TAM hold its powerful, consistency, reliability and validity in explaining its variable (Adam et al., 1992; Davis & Venkatesh, 1996; Szajna, 1994).

In general, TAM revealed a 30 to 40 per cent of variance and even lower as only 25 per cent in certain cases is explained (Gefen & Straub, 2000; Taylor & Todd, 1995b). The facts of low explanations of variance are seen to be as a major limitation of TAM studies. TAM failed to give fuller explanation and especially in a complex condition (Chuttur, 2009; Taylor & Todd, 1995b) as compared to TPB and Decomposed TPB. The lower variance explanation in majority of the studies are criticized due to lack of consideration of external variables besides the original TAM variables (Agarwal & Prasad, 1999; Chuttur, 2009). Thus, incorporating more variables and exploring boundary conditions is seen as benefited as well as further improved the TAM's theory. This indirectly could provide deeper understanding on factors contributing to the original theory of TAM: ease of use and usefulness. Hence, even though TAM is most commonly employed model of technology usage and acceptance and received considerable empirical support, yet this theory is seem not conclusive and still having a contradictory views (Bagozzi, 2007; Chuttur, 2009; Lee et al., 2003) which could lead to many more exciting directions in future discoveries.

2.3.4 Technology Acceptance Model 2 (TAM2)

The understanding of TAM which is concluded to reached a saturation level (Chuttur, 2009) and unable to explain beyond the perceived usefulness and perceived ease of use forced the model to be extended (Venkatesh & Davis, 2000). The introduction of TAM2 to overcome the limitations of basic TAM, introduced with additional variables act as antecedents to the perceived usefulness (Venkatesh & Davis, 2000) (Figure 2.4) and perceived ease of use (Venkatesh, 2000) (Figure 2.5) variables. As the results, TAM2 are able to produce more detailed explanations in both voluntary and mandatory conditions.

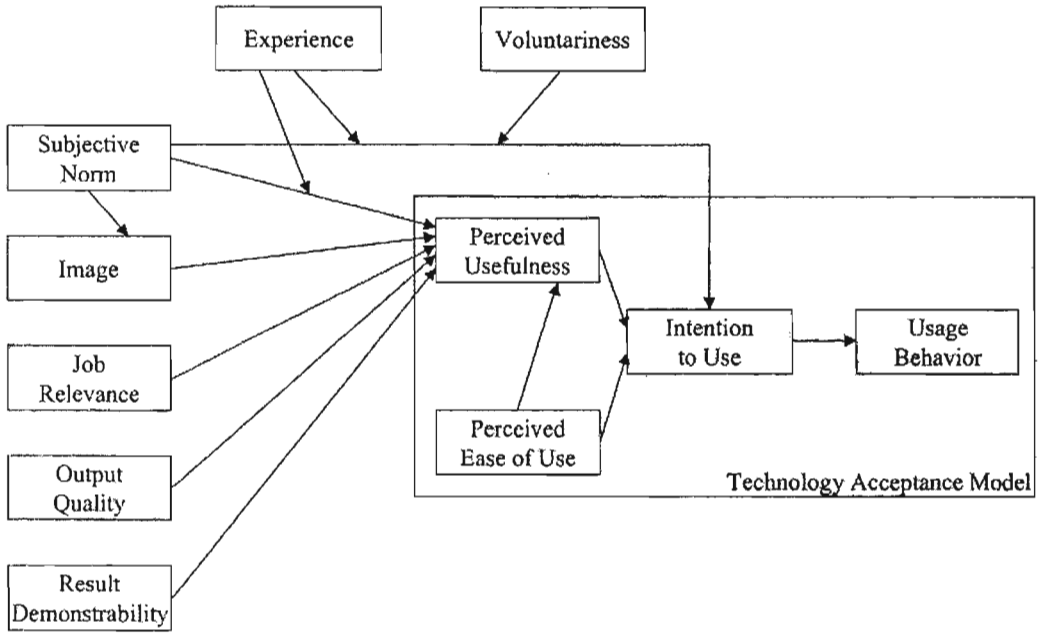

Figure 2.4
Technology Acceptance Model 2
Source: Venkatesh, V., & Davis, F. (2000). A Theoretical Extention of the Technology Acceptance Model: Four Longitudinal Field Studies. Management Sciences, 46(2), 186-204.

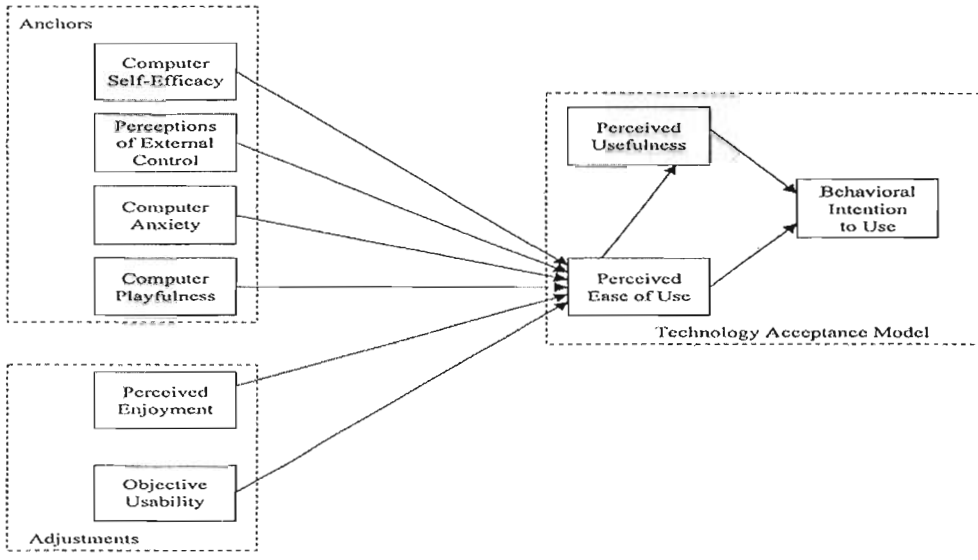

Figure 2.5
Extending TAM to include determinants for perceived ease of use
Source: Venkatesh, V. (2000). Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation and Emotion into the Technology Acceptance Model. *Information Systems Research, 11*(4), 342-365.

The development of TAM2 basically to reveal the important issue in the usage of technology in a workplace. However, the user acceptance remains a complex, indefinable yet extremely unsolved critical issue (Venkatesh & Davis, 2000). Undoubtedly, TAM2 strongly supported both social influence processes and cognitive instrumental processes. In fact, there is consistency with the basic TAM relationship where ease of use, usefulness, intention and usage were well supported with the help of mediation by intention. In spite of the successful explanation of the variable with almost 60 per cent, the achievement yet not adequate and being criticized after some time of applications.

TAM2 is concluded as failed to consider the possibility of the important effects of attitude towards the system use (Yang & Yoo, 2003). In respect to the attitude variable, Davis et al. (1989) considered it as less important and should be eliminated, instead of being extended into affective and cognitive variables with antecedents.

The extension of basic theory to test the role of moderators which are voluntariness and experiences on intention and a new determinant that is subjective norm also reflected an improvement to the model. The result direct a significant effect on usage intentions over and above perceived a usefulness and perceived ease of use only when usage is mandatory and experience is in the early stages (Venkatesh & Davis, 2000). Indirectly the results explained the previous research where the role of social influence is not significant in a voluntary context (Davis, 1986; Davis et al., 1989; Mathieson, 1991). Social influence processes which are subjective norm, voluntariness and image seem to be important elements in a mandatory system. In a voluntary system on the other hand, individuals judge the benefits and usefulness of a system by using and having a direct experience with the system over time. Thus, social influence elements have no effects on perceived usefulness and intention to use any system introduced. Besides, the inconsistency of the results of perceived usefulness and perceived ease of use depending on voluntary and mandatory conditions, TAM2 being argued as limiting the performance of the theory. Towards an extend, Burton-Jones and Hubona (2006) concluded that system experience, level of education and age have direct relationship with the system usage without required to be mediated by perceived usefulness and perceived ease of use.

Another process in TAM2 is the cognitive instrumental which the effect is remained significant over time compared to the social influence. The interaction effect between job relevance and output quality in determining perceived usefulness is the important finding by Venkatesh and Davis (2000). The concept of interaction is similar with the previous finding by Davis et al. (1992) and Goodhue (1995) which is between task characteristic and techno-characteristics. The interaction effect explained that individuals cognitive on system's usefulness are affected by their job goals and job relevance which is concerned on the output quality as well. However, the idea being refuted by Bagozzi (2007) where TAM2 is not suitable in explaining and predicting system use. The argument is that the determinants of intention to act are due to the evaluation and reflection. Hence, in acting towards accepting the system, one could reformulate the intention and even could cause in different direction of action taken. In addition, the introduction of UTAUT (Venkatesh, Morris, Davis, & Davis, 2003) indirectly proved that TAM2 is still not conclusive. Even Venkatesh and Davis (2000) believes that the model need to be refined, incorporates other determinants of usage intentions and behavior as well as improved in terms of taking into account the effect of moderators (Agarwal & Prasad, 1999).

2.3.5 Theory of Planned Behavior (TPB)

Theory of Planned Behavior is a well-researched model and successfully predict behavior under a variety of settings (Pavlou & Fygenson, 2006). TPB as in Figure 2.6 is designed based on the TRA (Ajzen & Fishbein, 1980). Among others, TPB is claimed to be as the

most influential theories in explaining and predicting human behavior (Ajzen, 1991; Sheppard, Hartwick, & Warshaw, 1988; Yaghoubi & Bahmani, 2010) in a wide range of behaviors, among others are the acceptance of telemedicine technology by physicians (Chau & Hu, 2002), virtual banking (Liao, Shao, Wang, & Chen, 1999; Yaghoubi & Bahmani, 2010); computer resource center (Taylor & Todd, 1995b); and information technology adoption (Gentry & Calantone, 2002; Venkatesh, Morris, & Ackerman, 2000); as well as acceptance of electronic brokerage services (Bhattacherjee, 2000).

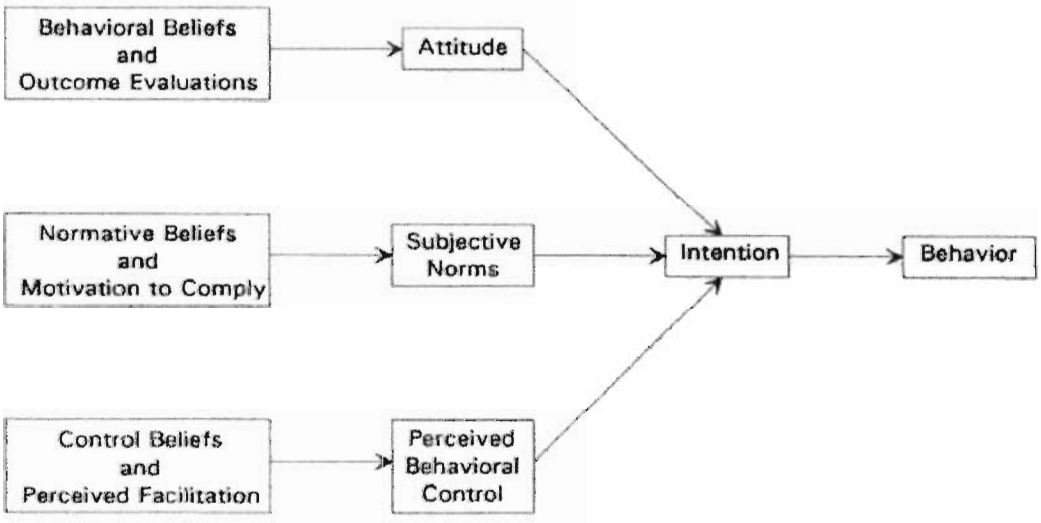

Figure 2.6
Theory of Planned Behavior
Source: Mathieson, K. (1991). Predicting User Intentions: Comparing the Technology Acceptance Model with the Theory of Planned Behaviour. Information Systems Research, 2(3), 173-191.

TPB is an extension of TRA with the introduction of Perceived Behavioral Control (PBC) perception. This is a set of control beliefs and their perceived power in order to facilitate or inhibit the performance of a behavior. Hence, TPB is a theory with three (3)

constructs, *i.e.* attitude, subjective norm and perceived behavioral control. Attitude is a person's overall evaluation of performing the behavior, whereas subjective norm is a person's perception of the expectation of important others about the specific behavior (Pavlou & Fygenson, 2006). In overall, the TPB is aiming to predict deliberative and planned behavior. The integration of PBC as an addition to the TRA model is due to the fact that individuals do not have completed voluntary control over their behavior, *i.e.* could be due to lack of skills or resources and limit in the action (Ajzen, 1991).

Even though TPB is believed to be the most influential theories in explaining and predicting human behavior, yet this theory having some limitations. In principle this theory is applicable to one (1) level of specificity, where TPB unable to incorporate two (2) related behaviors in the model simultaneously. For instance, in understanding a connection of getting information and product purchasing intention or behavior as studied by Pavlou and Fygenson (2006). However, in a few years back, this limitation is taking care as relationship between two (2) behaviors is seem to be important and yet little studies is carried out. Undoubtedly, TPB could aggregate beliefs in creating measures of attitude, subjective norm and PBC (Ajzen & Fishbein, 1980). Unfortunately, this aggregation is criticized for unable to identify a specific construct that contribute to the behavior as well as failed to explain the biases it could create (Karahanna & Straub, 1999; Taylor & Todd, 1995a, 1995b). This aspect is also stressed in a study by Truong (2009) who figure out that little is known on what non-motivational factors affect the intention to use online video and television services. In order to overcome the constraint,

thus, the Decomposed TPB is introduced that is the similar constructs which is applied in a specific technology context (Taylor & Todd, 1995b). The development of Decomposed TPB (Taylor & Todd, 1995b) and UTAUT (Venkatesh et al., 2003) theories concluded that TPB is inconclusive in predicting and explaining behavior.

2.3.6 Innovation Diffusion Theory (IDT)

The Innovation Diffusion Theory (IDT) or Diffusion of Innovation Theory (DOI) (Figure 2.7) is a theory related to communication is extensively studied in different angle by several main scholars. The applied diffusion model with five (5) adoptive categories onwards stages: innovators, early adopters, the early majority, the late majority and laggards is introduced since 1969 by Bass, which then continued to be adopted and modified by Moore (1995) and Rogers (2003). The academic disciplines in which the theory are applied include anthropology, communication, geography, sociology, marketing, political sciences, public health and economics (Awa et al., 2010). However, the practical exploration of studies does not specifically target the acceptance of information technology or electronic commerce as in TAM (Moore & Benbasat, 1991).

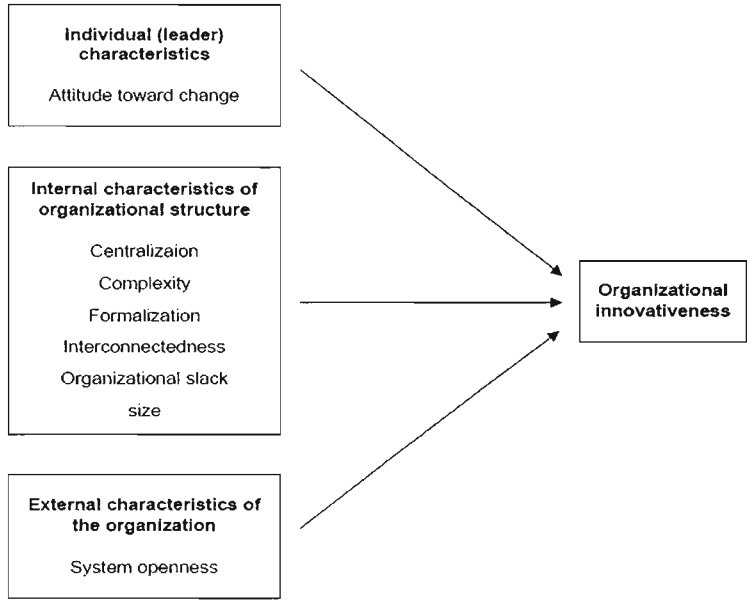

Figure 2.7
Diffusion of Innovation Theory
Source: Rogers, E. M. (1995). *Diffusion of Innovations* (4th ed.). New York: The Free Press.

This theory is different from TRA, TPB and TAM as the emphasized is the process of how new ideas, practice or technologies is spread or communicated into a social system (Rogers, 2003). Unlike the normal acceptance and usage of technology theory, *i.e.* TRA, TPB and TAM are focusing on attitudinal variables to determine the behavior (Awa et al., 2010; Fishbein & Ajzen, 1975). The DOI theory identifies five (5) characteristics construct of an innovation which are relative advantage, compatibility, complexity, triability and observability (Yi, Jackson, Park, & Probsf, 2006). Unfortunately, these characteristics are commented as not fully represent or reflect the construct of information technology or electronic commerce. In fact, Moore and Benbasat (1991) belief that there is a need to expand the Roger's set of innovation characteristics in order

to give more wider coverage on innovation. In addition to that, the limitation as redundancy or overlap of variables also incurred as for relative advantage and complexity in DOI theory which are claimed to be nearly alike as perceived usefulness and perceived ease of use in TAM respectively (Moore & Benbasat, 1991; Oh, Ahn, & Kim, 2003; Yi et al., 2006).

2.3.7 Unified Theory of Acceptance and Use of Technology (UTAUT)

The formulation of a new theory of technology acceptance, UTAUT (Figure 2.8) which covers not only user intention, but also their behavior evidenced the lacking aspect in the previous models. This theory with the introduction of the moderators is providing more effective guidance in understanding the determinants of acceptance in technology. Technically, UTAUT takes into consideration the commonalities across the eight (8) models as the basis of a new formulation model (Venkatesh et al., 2003). The related eight (8) models are TRA, TPB/DTPB, TAM/TAM2, C-TAM-TPB, MM, MPCU, IDT and SCT. The commonalities divided into three (3) categories, *i.e.* significant, non-significant after some time and significant only under mandatory condition.

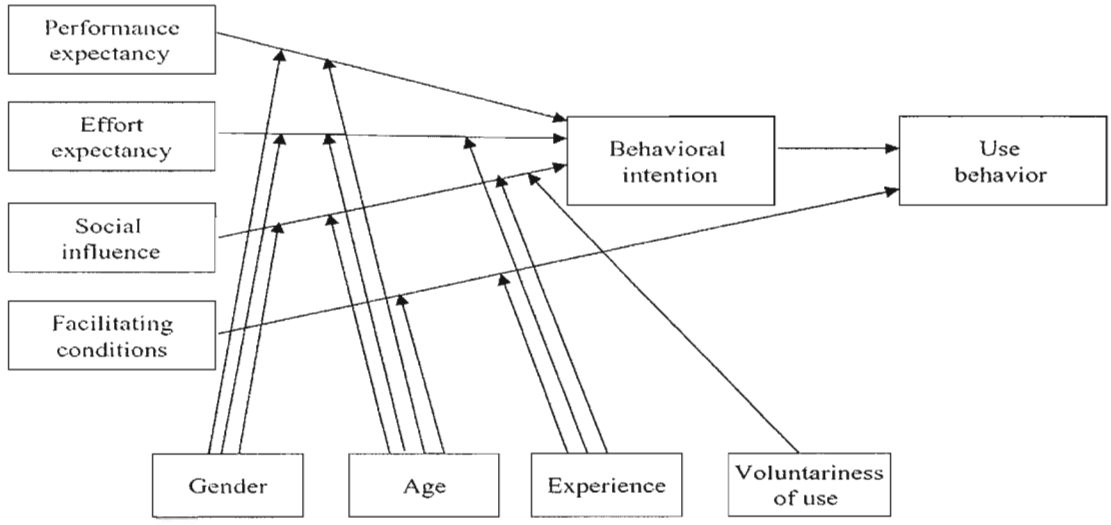

Figure 2.8
Unified Theory of Acceptance and Use of Technology
Source: Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly, 27*(3), 425-478.

As summarized in Table 2.2, the strongest influence in all time periods are attitude (in TRA and TPB/DTPB), perceived usefulness (in TAM/TAM2 and C-TAM-TPB), extrinsic motivation (in MM), job-fit (in MPCU), relative advantage (in IDT) and outcome expectations (in SCT). The other constructs such as perceived behavioral control (in TPB/DTPB and C-TAM-TPB), perceived ease of use (in TAM/TAM2), complexity (in MPCU), ease of use (in IDT) and self-efficacy as well as anxiety (in SCT), changed to non-significant after some time where initially are significant. Subjective norm (in TPB/DTPB, C-TAM-TPB and TAM2), social factor (in MPCU) and image (in IDT) are significant only under the mandatory conditions and not during voluntary implementation. Then the significant commonalities are categorized into four (4) main constructs in UTAUT, *i.e.* performance expectancy (PE), effort expectancy (EE), social

influence (SI) and facilitating conditions (FC) which have direct influence on intention to use technology and behavior. In addition, of the four (4) main UTAUT constructs, this new model emphasized the moderators with four (4) main key roles, *i.e.* gender, age, voluntariness and experience. However, attitude toward the use of technology, self-efficacy and anxiety seem as not having direct influence on intention.

Table 2.2
The commonalities across the eight models

IV	TRA	TPB/ DTPB	TAM/T AM2	C-TAM-TPB	MM	MPCU	IDT	SCT	UTAUT
SIGNIFICANT & STRONGEST INFLUENCE									
Attitude	/	/							/
PU			/	/					PE
Extrinsic motivation					/				PE
Job-fit						/			PE
Relative adv.							/		PE
Outcome expectations								/	PE
SIGNIFICANT THEN NON SIGNIFICANT									
PBC		/		/					FC
PEOU			/						EE
Complexity						/			EE
EOU							/		EE
Self-efficacy								/	/
Anxiety								/	/
SIGNIFICANT IN MANDATORY CONTEXT									
SN	/	/	/	/					SI
Social factors						/			SI
Image							/		SI

Source: Venkatest et al. (2003)

Via empirically tested the original data on four (4) organizations and cross-validated the new data on another two (2) organizations, UTAUT turns out to be having a substantial improvement over the eight (8) models. This is achieved when all internal consistency reliability are greater than 0.70 which meant 70 per cent (adjusted R^2) of the variables

supported and explained in the theory (Venkatesh et al., 2003). In addition to that, UTAUT also is able to integrate the key elements among the 32 main variables and the four (4) moderators to the intention and behavior in accepting the technology. The tests support that there are three (3) direct determinants of intention to use which were PE, EE and SI. FC and intention on the other hand, are the direct determinants of usage behavior. The main moderators are also confirmed as important to UTAUT, *i.e.* experience, voluntariness, gender and age.

Thus, UTAUT provides an alternative foundation for future research in the related areas. The key determinants with the moderators definitely restructure and enhance the existing models in intention to use and behavior while retaining a parsimonious structure (Venkatesh et al., 2003). In Table 2.3, the summary of the findings revealed that gender and age do play a significant role in PE where the intention to use technology are more salient to younger men. In the case of EE, gender, age and experience affected the intention where technology are more salient to women in older age which the intention to use is deteriorated with experience. SI on the other hand, is more significant under the mandatory condition and among older women is insignificant with the absence of the moderators. The effect of FC is only significant on usage when self-efficacy, anxiety and attitude are dropped and matter only for older worker with experience.

Table 2.3
Summary of findings

DVs	IVs	Moderators	Explanation
Behavioral intention	Performance expectancy	Gender, Age	Effect stronger for men and younger workers
Behavioral intention	Effort expectancy	Gender, Age, Experience	Effect stronger for women older workers and those with limited experience
Behavioral intention	Social influence	Gender, Age, Voluntariness, Experience	Effect stronger for women, older workers, under mandatory use condition and with limited experience
Behavioral intention	Facilitating conditions	None	Non significant due to the effect being captured by effort expectancy
Usage	Facilitating conditions	Age, Experience	Effect stronger for older workers with increasing experience
Behavioral intention	Computer self-efficacy	None	Non significant due to the effect being captured by effort expectancy
Behavioral intention	Computer anxiety	None	Non significant due to the effect being captured by effort expectancy
Behavioral intention	Attitude toward using technology	None	Non significant to the effect being captured by performance expectancy and effort expectancy
Usage	Behavioral intention	None	Direct effect

Source: Venkatesh et al. (2003)

Although UTAUT is claimed to be as the robust model and being validated in a wide range of settings across diverse technologies (Brown, Dennis, & Venkatesh, 2010), yet there are limitations associated with the model. UTAUT model is commented as a reflection of an individual's internal schema of beliefs where the external part is ignored (Brown et al., 2010). This is taking into account the lacking effect of facilitating condition on intention which potentially is facilitated the performance of a behavior. Despite being predictive, UTAUT as TAM is more integrative, however, this model weak in the ability to explain. This is critically commented by Venkatesh and Bala (2008) where UTAUT is unable to provide fuller and better explanation that are enable in

constructing interventions that promote adoption (Venkatesh & Davis, 2000; Venkatesh & Davis, 1996). The very significant comment is UTAUT model successfully integrated the 32 variables with four (4) moderators, but the application is too general not specific to the class of technologies (Venkatesh & Bala, 2008). The claimed made that with focus to a specific class of technology, the explanatory power could be stronger rather than discussing on a general model.

Accordingly, the main four (4) UTAUT determinants, *i.e.* performance expectancy, effort expectancy, social influence and facilitating conditions are expected to contribute in this research too. It is expected to overcome the comments put forward. Thus, facilitating conditions is tested in this research to be predicted having a relationship with behavioral intention. In addition, the relationship of the main four (4) determinants on behavioral intention is expected to be moderated by few interventions introduced in TAM3. In this research, the proposed intervention is treated as moderators as the study is interested on the relationship with the determinants rather than the time factor. TAM3 is explained in detail in the following part.

2.3.8 Technology Acceptance Model 3 (TAM3)

Basically, TAM3 is an integration of models by Venkatesh and Davis (2000) and Venkatesh (2000) that focusing on the development of a comprehensive nomological network (integrated model) on the determinants at the individual level adoption and use

(Venkatesh & Bala, 2008). The main objective of this model is to test the relationship between the determinants as it crucial not to have any in order to propose interventions into the model. The model is tested using mandatory and voluntary situation simultaneously. However, data collection are based on user perceptions of voluntariness in having consistent results as in TAM2 (Venkatesh & Bala, 2008). In general, the findings regarding perceived usefulness and perceived ease of use are consistent with Venkatesh and Davis (2000) and Venkatesh (2000) respectively. In addition to the consistency, there are several new directions via moderator that is experience. In overall the behavior intention under this model is 40 to 53 per cent clearly explained by the variables. The percentage showed that TAM3 is not the best model as TAM2 and UTAUT which have relatively higher percentage in successfully explained the variables (Venkatesh, 2000; Venkatesh & Davis, 2000; Venkatesh et al., 2003).

The most important findings of TAM3 are the determinants of perceived usefulness and perceived ease of use respectively which not have any significant effects between them. In the case of moderator - experience, the effect of perceived ease of use on perceived usefulness became stronger as experience increased. This stronger effect also incurred in two (2) ways of interactions between subjective norm and experience under a mandatory context. Whereas in other situations for instance the effect of computer anxiety on perceived ease of use; perceived ease of use on behavioral intention; as well as on three (3) ways of interactions between subjective norm, experience and voluntariness, the effect became weaker as experience increasing (Venkatesh & Bala, 2008).

Apart from the empirically test the integrated model, Venkatesh and Bala (2008) a new research agenda is proposed by introducing the interventions which could influence the determinants of perceived usefulness and perceived ease of use. An appropriate design of the intervention is able to correct ones perception of others' behaviors and views (Wenzel, 2005). It is claimed to be important and necessary in a situation where system being complex and targeted to a different group that is enterprise. Hence, TAM3 is claimed to be comprehensive and potential for actionable guidance (Venkatesh & Bala, 2008) to the acceptance of new system in a workplace. However, the study of this theory required and applicable only in a control condition as subject is tested in pre- and post-implementation of intervention (Wenzel, 2005). Thus, a study without the condition of control condition as well as the pre- and post-implementation situation, TAM3 is failed to play it role.

TAM3 is introduced in a way to test the pre- and post-implementation interventions as claimed (Venkatesh & Bala, 2008) to have an impact and suitable as well as applicable in testing a very complex IT implementation in organization. The scholars (Venkatesh & Bala, 2008) introduced this model with a test to check the relationship between perceived ease of use and perceived usefulness either to have direct or reverse relationship. It is crucial to validate the absence of any form of relationship in understanding the role plays by the interventions put forward in TAM3. The crucial elements of interventions as potentially influence on the determinants of original TAM are claimed to be (i) reduce an initial resistance to a new system to a minimum level and (ii) possible in providing a

more realistic view of the system especially in a case of having a complex or related to the organization's application.

Pre-implementation which includes initiation, organizational adoption and adaptation are a representative of a set of organizational activities and taken place during the development as well as at the deployment stage (Venkatesh & Bala, 2008). The success of this pre-implementation interventions is potentially lead to an acceptance towards a new system introduce in the organization. Whereas, the post-implementation is taking care the user acceptance, routinization and infusion (Cooper & Zmud, 1990), that take place after the deployment of a system. The purpose is to enhance the level of user acceptance via the assist of managerial and support activities. The complexity of a system could give impact on the acceptance of such system (Ahuja & Thatcher, 2005). The resistance toward the system is increased as the complexity of it increasing, hence required a substantial change in handling, managing, organizing and implementing such system (Venkatesh, 2006). The fear or resistance of accepting a new system introduce is mostly developed from the perception of having changes in daily routines, habits, job characteristics and communication as well as threaten to be degraded in the organization (Beaudry & Pinsonneault, 2005; Boudreau & Robey, 2005; Lapointe & Rivard, 2005; Markus, 1983). Of having such comment and arguments on the resistance to change to a new system, intervention factors are seems to be a new hope in minimizing such resistance (Venkatesh & Bala, 2008). Despite having comment and different views on the important of interventions due to the effect of training which could be manipulated by

different modes (Venkatesh, 1999a), yet Venkatesh and Bala (2008) could not deny on the important contribution that these intervention factor could possibly contribute to intention to accept the technology introduced.

TAM3 and a research agenda on interventions indirectly had proposed a framework in considering pre- and post-implementation states to suit with the types of system. The proposed framework are (i) for a complex system, interventions that create favorable ease of use perceptions are relevant - design characteristics, user participation, training and peer support; (ii) for a voluntary system, interventions that influence the determinants of perceived usefulness are - design characteristics, user participation, incentive alignment, training, organizational and peer support; and (iii) for interorganizational systems that affect organizational business processes or a customer relationship management system that is critical to service delivery, the related interventions are user participation, peer support and management support. However, without an empirical evidence of the interventions on drivers of behavioral intention or usage of technology, this model seems left without contribution to the body of knowledge. In fact, using the right model as a management tool to understand the drivers of acceptance is helping in designing proactive interventions which could increase current user acceptance and facilitate new adopters (Anderson et al., 2006).

Undeniable, the choice, behavioral option, accomplishment, rewards and punishment are also essential factors. Thus, the factors are considered as value that one expect on any

choice made either in terms of benefit received or value in returned to be sacrificed. In fact, the Operant Conditioning Theory (OCT) that take into consideration all the above mentioned factors is explained accordingly in the following section.

2.3.9 The Operant Conditioning Theory (OCT)

Expectancy theory is related to choice an individual made on the behavioral option. This means that one is motivated to a behavioral action when believed to achieve the desired outcome. However, it is not applicable all the time where there is a time where conditioning theory applies. This means that, there is a time where one is response to a behavioral where there is a stimulus. The behavioral is repeated when the stimuli give an effect on action taken (Skinner, 1969). In fact, the OCT stress on behavior is performed if it lead to desire consequences and is performed if it lead to undesired consequences (O'Donohue & Ferguson, 2001; Skinner, 1969). Therefore, company could achieve its goals by linking the performance of specific behaviors to the accomplishment of specific outcomes via motivation. In addition, the considerations is raised by conditioning that is with a balance between rewards, punishment and timing (Jelavic & Salter, 2014; Teo, Ling, & Ong, 2005). It could be that reinforcement is not the determinant of behavior change, but rather that the conditions created in the behavior modification intervention, *i.e.* structure, predictability feedback and the amount of time spent in the learner/teacher relationship is facilitated the formation of attached relationship which in turns facilitates behavior change (Skinner, 1969).

The OCT is further elaborated and tested into four (4) tools, *i.e.* positive reinforcement, negative reinforcement, extinction and punishment (Weiss, 1990). These tools are motivated towards a high performance and prevent workers from engaging in other behavior which could obstruct from organizational effectiveness. Positive reinforcement gives workers' outcomes in terms of monetary rewards, bonuses or job promotions as desired as organizational functional behaviors are perform. Negative reinforcement is takes into action by eliminating or removing undesired outcomes as soon as functional behavior is performed. However, the negative reinforcement is creating an unpleasant workplace, yet it is an alternative if unable to perform via positive reinforcement. Extinction involves limiting the dysfunctional of the performance by eliminating the causes of such behaviors. This is eliminating workers who break the rules and unethical as such behavior could affect others. Punishment is enforced in order to curve any dysfunctional practice or behavior which could be in the form of pay cuts, temporary suspensions, demotions or firing. There are cases where monetary rewards are the most effective kind of positive reinforcement. However, it is not necessarily yield the same positive effects (Haines, Merrheim, & Roy, 2001; Hinze, 2002; Vredenburgh, 2002). The modification via Operant Reinforcement Theory constantly demonstrated that behavior is explained and changed as well as predicted with past and continues reinforcement given. This is basically recognizes attention as a reinforcing event. Thus, behavior is a functioning of the environment in which the behavior occurs.

2.4 Extensions to the UTAUT Model

The ability to successfully explain over 70 per cent variance in intention via several technologies, make UTAUT as the robust and comprehensive model. Unfortunately with the limitations and critics, UTAUT model is required for expansion or modification. The comment on lacking of studies in a specific class of technologies which claimed could provide a clear and deeper explanation (Venkatesh & Bala, 2008) is actually forced UTAUT to extend the boundaries with an addition of new variables perhaps and strengthen the original model. In line with extending the UTAUT model, Venkatesh and Bala (2008) also pointed out on the need to integrate technology stream with another stream. This perhaps could push the research areas toward a more cumulative and expansive nomological network (Venkatesh et al., 2003).

The basic concept underlying user acceptance model is the behavioral elements in a person to form an intention to act (Ajzen, 1991) which then turn into action to act (Venkatesh et al., 2003) with the consideration of certain constrains (Bagozzi et al., 1992). However, there is a situation where strong behavioral elements which could influence an intention to act and follow with action without any limitations. Thus, there is a need to study on intention to act as the antecedent of behavior since it is the critical factor of the model (Venkatesh et al., 2003). Even though the key dependent variable is the intention, the outcomes of the study is certainly to provide understanding and explanation on the phenomenon of actual use of the technology.

In fact, the extensive review of many research articles reveals that many of the researchers extended the original UTAUT model. The followings are among the extended research studies where modification or addition are made to the original and basic theory of technology acceptance.

Anderson, Schwager and Kerns (2006) utilized UTAUT model to study on the usage of Tablet PCs among faculty members of Business College (Figure 2.9). The aims are to address the drivers of user acceptance of Tablet PCs as well as to figure out whether gender, age, experience and voluntariness make any difference on the decision to use Tablet PCs. In addition, by understanding the relative drivers it could ease in designing a basis of proactive interventions. The results and findings of this study are consistent with the previous studies and are useful as a guidance to implement the new technology to the faculty. In fact, the findings also recognized the role of moderators as the variance increased from 44.6 per cent to 69 per cent. The interesting finding in this study is only performance expectancy turned out to be significant where other constructs, *i.e.* effort expectancy, social influence and facilitation conditions are not significant, hence reject the hypotheses. Performance expectancy is proven as the strongest determinant of usage in this study as members perceived the benefits associated to the usage. The effort expectancy revealed the determination of faculty member to spend time learning on the new technology and willing to sacrifices some ease of use for the perceived benefits. Even though, the social influence portrait a reverse result from performance expectancy, but it is still consistent with the previous studies because this study is on voluntary basis.

Another interesting finding is about facilitating conditions that is not significant to determine usage in this study. The result discloses that faculty members believed that knowledgeable and supportive personnel are prepared with the introduction of new technology. In terms of modifiers' outcomes, only voluntariness is significant whereas gender is ignored due to small number of female participants. However, an exploratory study conducted shows that gender play an important role as much as voluntariness. This gender moderator indicates that female faculty members are attracted to the new technology with the presence of training and support.

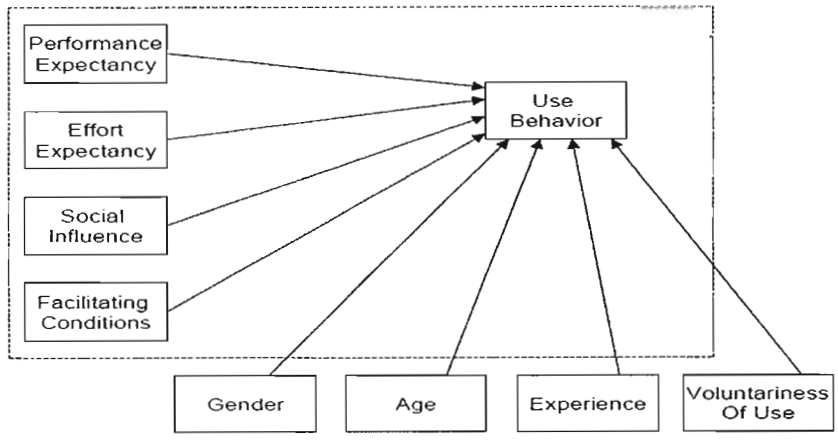

Figure 2.9
Empirical analysis of research model- Table PCs
Source: Anderson, J. E., Schwager, P. H., & Kerns, R. L. (2006). The Drivers for Acceptance of Tablet PCs by Faculty in a College of Business. *Journal of Information Systems Education, 17*(4), 429-440.

Lin and Anol (2008) revealed that commitment and perceived critical mass could also enhance learning online social support instead of the basic UTAUT: performance expectancy, effort expectancy, social influence and facilitating conditions (Figure 2.10).

This study is conducted in Taiwan among undergraduates to investigate the usage of instant messaging. The test results empirically demonstrate that all the variables except facilitating conditions have a significant effect on the online social support. The facilitating conditions in this study confirmed the previous study that it is significant on the usage of network IT and not supporting the online social support.

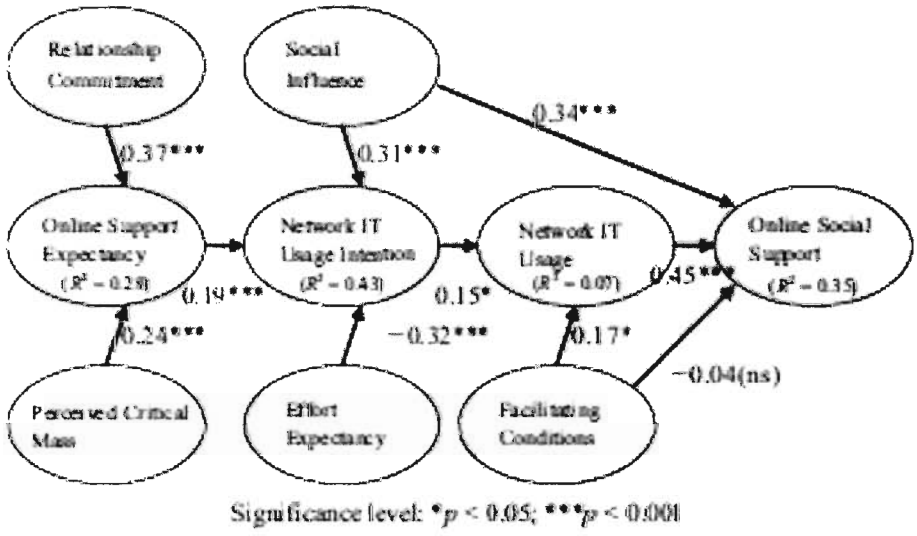

Figure 2.10
Empirical analysis of research model- Instant Messaging
Source: Lin, C.-P., & Anol, B. (2008). Learning Online Social Support: An Investigation of Network Information Technology Based on UTAUT. *Cyber Psychology & Behavior, 11*(3), 268-271.

Most of the previous study supports the important role play by the performance expectancy, but not in this study. In this study, social influence significantly influences the online social support more than the other UTAUT variables. This shows that word-of-mouth broadcast via the social connection of network IT users play the role of enhancing the online social support. Interestingly, incentives are accepted as one of the best ways to

improve effort expectancy. Beginner is helped by giving incentives to them to use the new introduced system. However, as reported in the previous study, the effort expectancy is decreased as experience increased. Besides that, the significant relationship of commitment and perceived critical mass as potential factors to attract online social support are the new findings that need to be considered too. The study also suggests that in terms of commitment, the online social support could be improved in usage by providing more demonstration programs. This demonstration program is to highlight how the network IT is useful in establishing a social relationship. The perceived critical mass on the other hand, give an idea to network designer or vendor on the creation of a system. In this study, the online social support revealed that a friendly function system is users' preference. If the system builds with multi-search ability such as different keywords are used to search for relatives using names, phone numbers, location or nicknames, the system is definitely the choice of users.

Wang, Wu and Wang (2009) extended UTAUT model with perceived playfulness and self-management of learning on a mobile learning (m-learning) study. The study aims to investigate whether age and gender do give difference impact on the acceptance of m-leaning. The m-learning is referring to delivery of learning to students anytime and anywhere through the use of wireless internet and mobile device. In a simple word, learning takes place not on a fixed location. As depicted in Figure 2.11, researchers have eliminated the use behavior, facilitating conditions, experience and voluntariness to use. This is because as m-learning is still new in Taiwan, the study focus on the behavioral

intention instead of usage. In addition to that, as the study focus on voluntary usage context, thus the voluntariness aspect is omitted. In order to ensure for the results to be generalizable, the study is conducted on five (5) organizations in Taiwan: Aerospace Industrial Development Corporation (AIDC), IBM Taiwan, National Changhua University of Education, Chung Chou Institute of Technology and Yuanlin Community University.

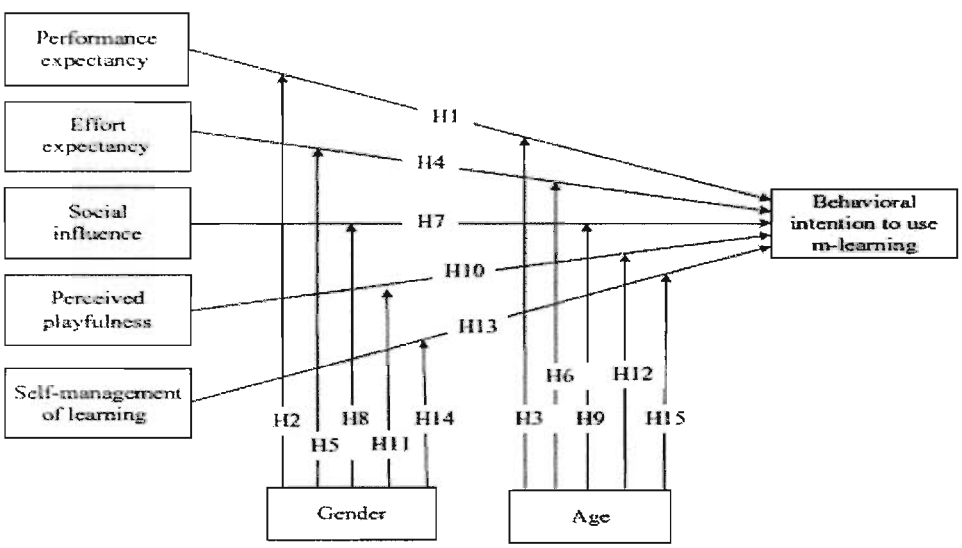

Figure 2.11
Research model m-learning (mobile learning)
Source: Wang, Y.-S., Wu, M.-C., & Wang, H.-Y. (2009). Investigating the Determinants and Age and Gender Differences in the Acceptance of Mobile Learning. *British Journal of Educational Technology, 40*(1), 92-118.

The result of this study is more a less consistent with the previous study where all the independence variables are significantly related to the behavioral intention to use m-learning. The model is successfully explained by the variables at 58 per cent and proved that performance expectancy is the strongest construct. Taking into consideration the

effect of moderators, the model is increased in the ability to be explained by those variables between 53 to 68 per cent. The results of the analysis of gender and age differences revealed that these two (2) moderators have no effect on performance expectancy and perceived playfulness. The new contribution to this study is the significant and positive effect of perceived playfulness and self-management of learning on behavioral intention to use m-learning. This finding reflects the important of cognitive aspects, website characteristics and motivation for searching as an element of attraction towards the acceptance of m-learning. Besides that, in improving the acceptance level, the target of users should be on the early adopters with more advance functions such as time management, learning content hierarchy control and learning progress control. This could indirectly attract those who have highly autonomous learning abilities that more likely to use m-learning. In terms of gender and age differences, all determinants except social influence influenced by female group were significantly moderated by both genders. Both ages, *i.e.* older and younger group are significantly influenced all the determinants except effort expectancy and social influence which influenced by younger group only. This interesting finding revealed that challenges and skills are important to be balance as the imbalance of either one (1) could result of bored and frustrated situation. For instance, if the challenge rendered by m-learning is lower that the user's knowledge level, user tends to get bored and if vice versa frustration situation is created. Hence, a mobile game-based learning systems program which could search for the balance between the challenges and skills is a tool to create an acceptable m-learning system. There are also results that partially supported the previous research related to effort

expectancy and social influence where these two (2) variables only significant for older users and not for younger users. Whilst in the previous research the two (2) variables are stronger predictors of behavioral intention for older rather than younger users. Another contradict finding is on social influence that is significant on men and insignificant for women.

Lu, Yu and Liu (2009) studied on the mobile data service (MDS) demographics in urban China (Figure 2.12). The aims of the study are to verify whether the major determinants of behavioral intention of UTAUT model could be applied in the context of MDS; to understand the moderating effects: age, gender, experience, income and location on the casual relationships toward 3G MDS in urban China; and to explore the possibility of confounding effects of the identified demographics on the identified causal relationships. Researchers exclude facilitation conditions among the independent variables because the study is on the intention to accept 3G MDS which only recognized the performance expectancy, effort expectancy and social influence. As for the components of moderators, most of the moderators except voluntariness are recognized with additional moderators: income and location. Exclusion of the voluntariness is due to the study is based on the voluntary use.

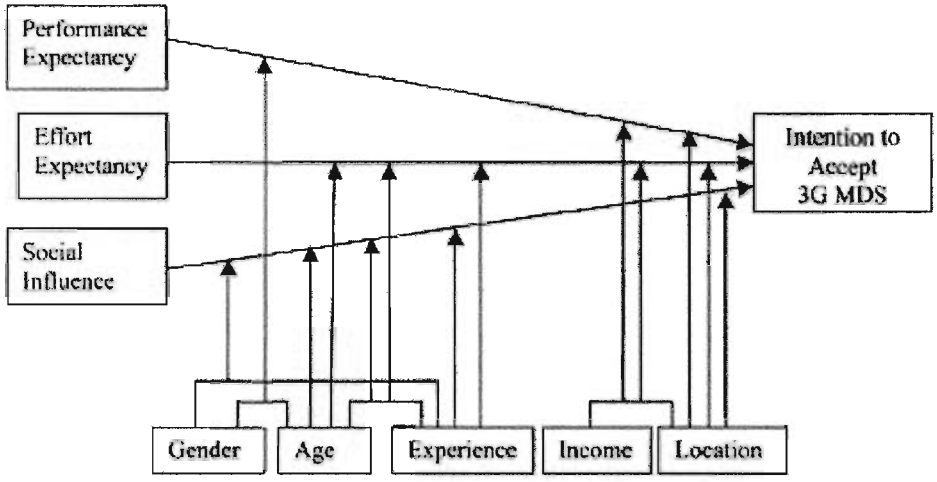

Figure 2.12
Modified research model for 3G MDS acceptance
Source: Lu, J., Yu, C.-S., & Liu, C. (2009). Mobile Data Service Demographics in Urban China. *Journal of Computer Information Systems, Winter*, 117-126.

The findings of this study are supported with the previous studies as the independent variables explained 56 per cent of the dependent variable. The performance expectancy, effort expectancy as well as social influence have a significant effect on behavioral intention. The difference is social influence is found to have a significant negative effect on behavioral intention. The significant modifying impacts on the model are only age, experience and location. However, taken into account all the modifying effect whether significant or not, the variance on behavioral intention increased to 68 per cent. The confounding revealed the significant effects of age by gender; age by experience; and gender by experience for all the independent variables. Conversely, the confounded effect of gender and experience to influence effort expectancy seems to be rejected. For the effect of income by location, the confounding effects support only the performance expectancy and effort expectancy. The nine (9) location of urban China via regression

analysis have successfully been classified into three (3) small groups, *i.e.* no income from Chengdu; high income from Chengdu; and average income from Hangzhou. Unfortunately, the finding is dropped and ignored in this study in ensuring there is no biased in the results.

Wang and Wang (2010) explored on factors influencing the individual decision to adopt mobile Internet (m-Internet) as well as the moderating effects of gender on the adoption of m-Internet in Taiwan. The m-Internet is referring to the accessing wireless internet anytime and anywhere via palm-sized mobile devices such as mobile phones, personal digital assistants (PDAs) and smart phones. This study is conducted based on the UTAUT model excluding the use behavior, facilitating conditions, age, voluntariness and experience constructs. The reasons of omitting those variables are because the usage still very low, the study is in a voluntary usage context and the adopters are aged between 20 and 35 years old. However, there are three (3) additional variables which are perceived playfulness, perceived value and palm-sized computer self-efficacy.

Figure 2.13 below depicts the following results and discussions. The original UTAUT variables which are performance expectancy, effort expectancy and social influence have a significant positive influence on behavioral intention. In term of strongest effect, the performance expectancy appears to be the strongest among the three (3) which means development in valuable functions and in variety services helped to increase the usage of m-Internet. Besides the performance, effort expectancy in terms of the amount of time

and effort needed to learn about and use the m-Internet also taken into consideration. Hence, in order to improve the usage the m-Internet should be designed in more users friendly as well as ease of use. Coinciding with the finding by Venkatesh et al. (2003), the social influence factor also play an important role as once individuals start to adopt and familiar with the m-Internet, the other colleagues and friends are persuaded. Thus, promotions need to be targeted on the potential early adopters with high level of personal innovation in IT (Rogers, 2003).

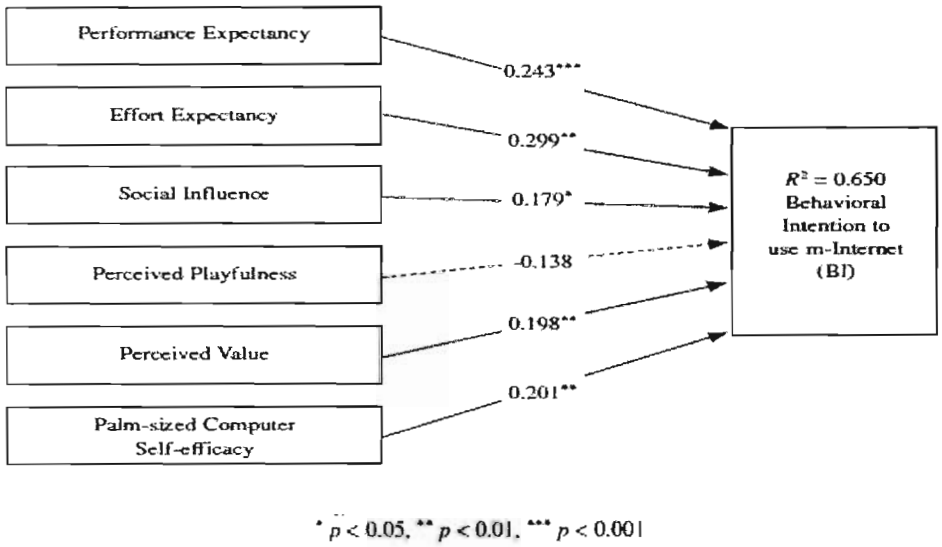

Figure 2.13
Research model and standardized path coefficients for all respondents: m-Internet
Source: Wang, H.-Y., & Wang, S.-H. (2010). User Acceptance of Mobile Internet Based on The Unified Theory of Acceptance and Use of Technology: Investigating the Determinants and Gender Differences. *Social Behavior and Personality, 38*(3), 415-426.

In addition to the findings, the three (3) new variables proposed in this study revealed that only perceived playfulness is the weak influenced on behavioral intention. The other two (2) constructs, *i.e.* perceived value and palm-sized computer self-efficacy are

significantly influenced the behavioral intention. The results explained that in order to strengthen the usage, the usage fee of m-Internet need to be reduced and consider early adopters in promoting advanced technology. The gender differences reflect that perceived value and social influence are found to be no effect by gender. The performance expectancy and palm-sized computer self-efficacy on the other hand are moderated by gender where the influence is significant on men and not for women and vice versa on the effort expectancy effect.

Sapio et al. (2010) studied on the usage behavior during the diffusion of a new emerging technology. The investigation focus on the intention to act that influences usage-usability and social-economic. Due to that reason, the framework considered a multidisciplinary approach which take into account the human factors discipline. Figure 2.14 below summarizes the results and depicts the significant paths of the factors affecting usage of T-government. Besides that, the figure also shows that facilitating conditions is none of the factors affected the usage of T-government in Italy. The performance expectancy, effort expectancy, social influence and facilitating conditions are the predictors of Set-Top Box (STB) use, interactive service use and informative service use. The aim is to study the rejection of Italian people to use the availability of on-line facilities all at one (1) time. As in the Figure 2.14, clearly shows that informative service use is not the choice and no factors could influence it. However, with a supplementary analysis, effort expectancy has a slight impact on the informative service use.

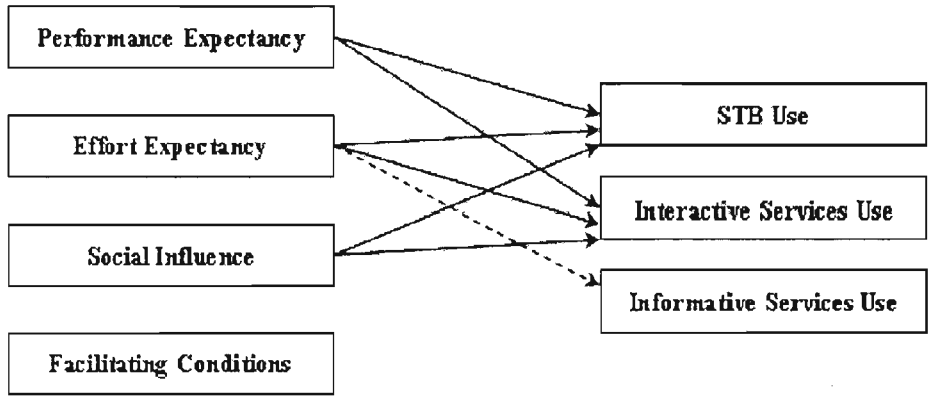

Figure 2.14
Usage of T-government factors: Final model with significant paths
Source: Sapio, B., Turk, T., Cornacchia, M., Papa, F., Nicolo, E., & Livi, S. (2010). Building Scenarios of Digital Television Adoption: A Pilot Study. *Technology Analysis & Strategic Management, 22*(1), 43-63.

In addition to that, the study tried to evaluate the microsimulation approach in predicting consequences of certain policies on different levels such as business or government. The policies suggested are likely related to the Digital TV model and T-government service where the existing general policy is limited in implementation strategy. In order to examine certain policies, several scenarios are created. The outcomes revealed on the importance of subsidy instead of public communication campaign. The digital TV services adopters, information service users and users of information and interactive services are influenced by the subsidy given. However, without public communication campaign, informative service user is reduced in number. Thus, subsidy and campaign do have their roles in encouraging individual to accept or refuse on the technology introduce.

Brown et al., (2010) focused the study on organizational factors leading to adoption of collaboration technologies (Figure 2.15). The objective is to develop and test a model that integrates UTAUT, *i.e.* technology adoption with theories about collaboration technologies, *i.e.* social presence theory, channel expansion theory and task closure model as depicts in the figure below. The study is conducted in Finland on working professionals who use short message service as well as on organization that use a collaboration technology. Collaboration technology is referring to a package of hardware and software that could support the technology adopted or used.

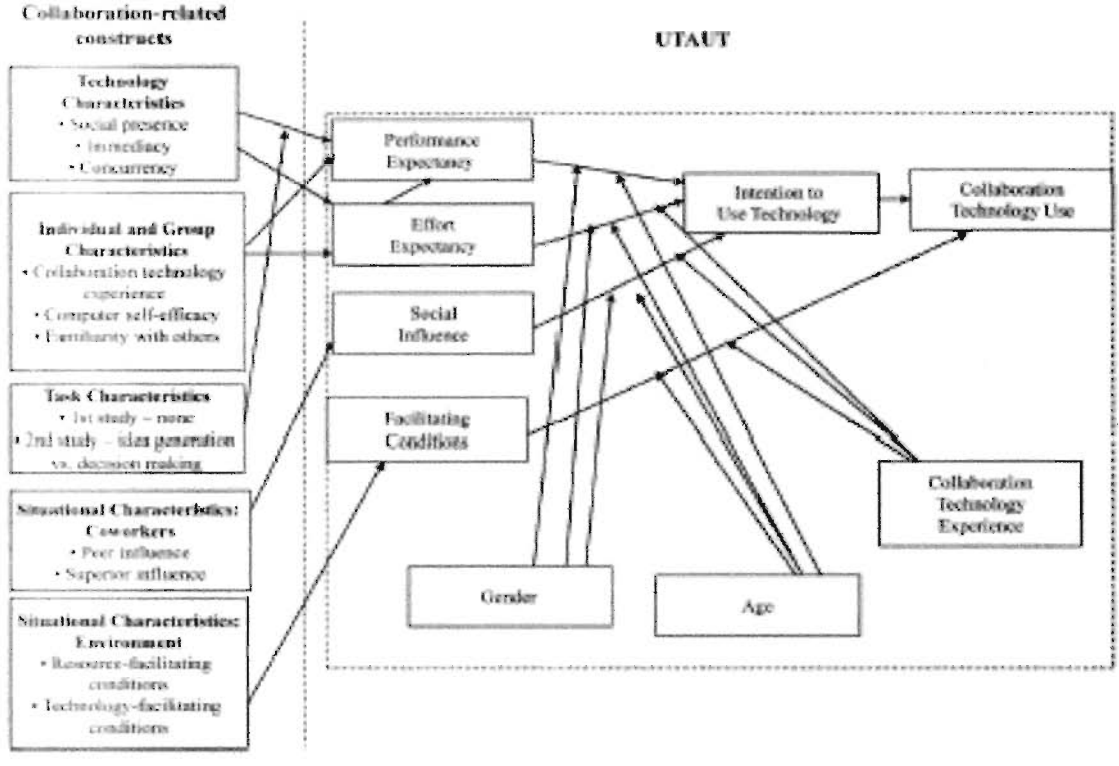

Figure 2.15
Research model- Short Message Service
Source: Brown, S. A., Dennis, A. R., & Venkatesh, V. (2010). Predicting Collaboration Technology Use: Integrating Technology Adoption and Collaboration Research. *Journal of Management Information Systems, 27*(2), 9- 53.

The results are related to prediction of behavioral intention and consistent with UTAUT's findings. In addition to that, the contribution of this study is by successfully demonstrated that UTAUT fully mediates the relationship between technology characteristics and use. This finding give a new basis in future research on factors influencing adoption and use of collaboration technologies. The three (3) technologies characteristics, *i.e.* social presence, immediacy and concurrency are directly influenced performance and effort expectancies. In the case of a study on users of SMS, the higher the social presence, increase in immediacy and greater concurrency, the higher performance expectancy and effort expectancy could be. However, in the study on Fortune 500 technology company in Finland, the findings are (1) higher social presence could only increase the performance expectancy for decision-making tasks; (2) increased immediacy has beneficial the performance expectancy effects for both task types but stronger on decision-making tasks; and (3) greater concurrency has greater effect on performance expectancy on decision-making tasks.

Besides that, the finding of this study revealed that individual and group characteristics influence effort expectancy only. The variable of computer self-efficacy which has no effect on intention to use a technology in UTAUT model shows that the greater self-efficacy is lead to greater effort expectancy. However, experience has reversed effect from self-efficacy where greater familiarity requires less effort in the use of collaboration technologies. The UTAUT is proved as effective in predicting intention to use. This includes the external influence, *i.e.* social influence and facilitating conditions that relate

to social and organizational environment. This means that peer as well as supervisor opinion and facilitating conditions influenced the intention to use. Hence, this study is depicted a consistent finding on UTAUT and revealed a new finding on collaboration technologies.

Wang, Liu, Tseng and Tsai (2010) studied on the acceptance of Distance Learning among teachers in colleges in Taiwan. Due to lacking in study of this field, the researchers trying to analyze the teachers' behavioral intention toward e-learning that is a form of planned teaching. The objectives are: to have a detail explanation on the factors that influence teachers' use of e-learning as well as the effect of interference of gender. In addition to that, researchers also included perceived sacrifice to be tested in the UTAUT model as in Figure 2.16: Research framework- Distance Learning. Perceived sacrifice is referred to the cost that is sacrificed or given up in order to obtain certain product. This includes the cost of perceived time, efforts and psychology. However, previous researchers claimed that the relationship between perceived sacrifice and behavioral intentions on consumers is negative. The finding of Wang, Liu, Tseng and Tsai also revealed the same thing where perceived sacrifice of e-learning is negatively influenced the teachers' behavioral intention. The other variables such as performance expectancy, effort expectancy, social influence and facilitating condition toward e-learning have positive influence on the intentions. The effect of interference of gender is significantly influenced the path relations. The results indicated that male teachers are significantly higher than female teachers.

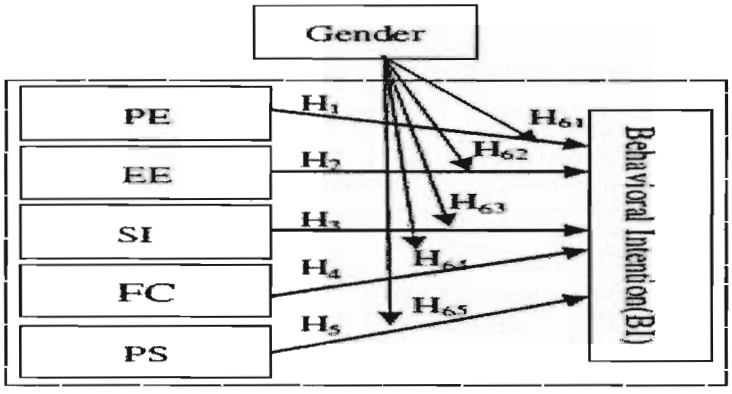

Figure 2.16
Research framework- Distance Learning
Source: Wang, C.-H., Liu, W.-L., Tseng, M.-C., & Tsai, H.-S. (2010). A Study of Taiwanese College Teachers' Acceptance of Distance Learning. *The International Journal of Organizational Innovation*, 243-260.

Although this unified model is accepted and integrated in many studies of various fields, their results revealed some inconsistencies when applied in different areas or situations. In other words, there is no universal UTAUT that can explain all situations of acceptance. As such, the present study is attempted to discover another model of acceptability in a situation where authority is involved in encouraging professionals to adopt the proposed system. Because UTAUT is recognized on its ability to explain almost 70 per cent of the variance in the dependent variable, the present study considered it as the underpinning concept in developing the theoretical frameworks.

Undeniable, the success in explaining the variance is due to the integration of 32 variables from eight (8) existing and widely accepted models. The 32 variables then are grouped into four (4) main effects and four (4) moderating factors on user acceptance

research. The original UTAUT model theorized that the four (4) main determinants, *i.e.* performance expectancy, effort expectancy, social influence and facilitating conditions have a significant relationship with user intention and use behavior. The constructs are moderated by age, gender, experience and voluntariness of use which revealed several points (Venkatesh et al., 2003) as discussed below.

2.5 Performance Expectancy and Intention to Use Technology

Performance expectancy is an expectation of achieving in job performance with the assistance from technology used (Venkatesh et al., 2003). Theoretically performance expectancy is considered as usefulness as the five (5) major constructs and is the strongest predictor of intention. Scholars has acknowledged the discovery of the similarities in basis of performance expectancy: usefulness and extrinsic motivation (by Davis et al., 1989; Davis et al., 1992); usefulness and job-fit (by Thompson et al., 1991); usefulness and relative advantage (by Davis et al., 1989; Moore & Benbasat, 1991; Plouffe, Hulland, & Vandenbosch, 2001); usefulness and outcome expectations (by Compeau & Higgins, 1995b; Davis et al., 1989); and job-fit and outcome expectations (by Compeau & Higgins, 1995b). The details of each construct with the definition and items used as measurement are as in the Table 2.4 below.

Table 2.4
Performance expectancy: Constructs, definitions and items

Construct	Definition	Items
Perceived Usefulness (Davis, 1989; Davis et al., 1989)	The degree to which a person believes that using a particular system would enhance his or her job performance.	1. Using the system in my job would enable me to accomplish tasks more quickly. 2. Using the system would improve my job performance. 3. Using the system in my job would increase my productivity. 4. Using the system would enhance my effectiveness on the job. 5. Using the system would make it easier to do my job 6. I would find the system useful in my job.
Extrinsic Motivation (Davis et al., 1992)	The perception that users will want to perform an activity because it is perceived as instrumental in achieving valued outcomes that are distinct from the activity itself, *i.e.* improved performance, pay or promotions.	Extrinsic motivation is operationalized using the same items as perceived usefulness from TAM (items 1 through 6 above)
Job-fit (Thompson et al., 1991)	How the capabilities of a system enhance an individual's job performance.	1. Use of the system will have no effect on the performance of my job (R). 2. Use of the system can decrease the time needed for my important job responsibilities. 3. Use of the system can significantly increase the quality of output on my job. 4. Use of the system can increase the effectiveness of performing job tasks. 5. Use can increase the quantity of output for the same amount of effort. 6. Considering all tasks, the general extent to which use of the system could assist on the job (different scale used for this item).
Relative Advantage (Moore and Benbasat, 1991)	The degree to which using an innovation is perceived as being better than using its precursor.	1. Using the system enables me to accomplish tasks more quickly. 2. Using the system improves the quality of the work I do.

Table 2.4 (Continue)

Construct	Definition	Items
		3. Using the system makes it easier to do my job. 4. Using the system enhances my effectiveness on the job. 5. Using the system increases my productivity.
Outcome Expectations (Compeau and Higgins, 1995b, Compeau et al., 1999)	Outcome expectations relate to the consequences of the behavior. Based on empirical evidence they were separated into performance expectations (job-related) and personal expectations (individual goals). For pragmatic reasons, four of the highest loading items from the performance expectations and three of the highest loading items from the personal expectations were chosen from Compeau and Higgins (1995b) and Compeau et al. (1999) for inclusion in the current research. However, our factor analysis showed the two dimensions to load on a single factor.	If I use the system: 1. I will increase my effectiveness on the job. 2. I will spend less time on routine job tasks. 3. I will increase the quality of output of my job. 4. I will increase the quantity of output for the same amount of effort. 5. My coworkers will perceive me as competent. 6. I will increase my chances of obtaining a promotion. 7. I will increase my chances of getting a raise.

Source: Venkatesh et al. (2003)

The degree to which an individual believes that by using the technology, the job performance is enhanced and it is the important factor in determining the behavioral intention. Among the four (4) constructs in the UTAUT model (*i.e.* performance expectancy, effort expectancy, social influence and facilitating conditions), performance

expectancy is the strongest predictor of behavioral intention (Anderson et al., 2006; Darsono, 2005; Lu et al., 2009; Venkatesh et al., 2003; Wang & Wang, 2010). This construct is basically moderated by gender and age where the effect is stronger and important to younger male employees in particular (Venkatesh et al., 2003). Age influence the drivers of behavioral intention where performance expectancy has a significant impact from younger workers. Hence, younger employees believe that using the technology could ease them to accomplish their task. Research on gender differences indicates that men tend to be highly task-oriented. As performance expectancy focus on task accomplishment, thus men could influence behavioral intention more than women. Considering the combine effects of moderator age by gender, the performance expectancy is weakening in the effect by aged females on behavioral intention (Lu et al., 2009).

Many researchers (*e.g.* Dwyer & Knapp, 2004; Hill, Scriven, & Wunsch, 1994; Ruby, 2005; Sterling & Brinthaupt, 2003) acknowledged the important of performance expectancy in influencing behavioral intention. The perceived benefits or relative advantage of the technology initiated have impact on the intention to adopt or use the technology (Anderson et al., 2006). Individual is more likely to adopt the new technology if that technology associated with certain benefits such as training and support provided. In fact, in some study (Anderson et al., 2006) revealed that individual willing to forego the ease of use for the perceived benefits.

2.6 Effort Expectancy and Intention to Use Technology

Effort expectancy is defined as the degree of ease associated with the use of the technology (Venkatesh et al., 2003). It is developed from three (3) major constructs which are perceived ease of use (Davis, 1989; Davis et al., 1989); complexity (Thompson et al., 1991); and ease of use (Moore & Benbasat, 1991) as indicated in the Table 2.5 below.

Table 2.5
Effort expectancy: Constructs, definitions and items

Construct	Definition	Items
Perceived Ease of Use (Davis, 1989; Davis et al., 1989)	The degree to which a person believes that using a system would be free of effort.	1. Learning to operate the system would be easy for me. 2. I would find it easy to get the system to do what I want it to do. 3. My interaction with the system would be clear and understandable. 4. I would find the system to be flexible to interact with. 5. It would be easy for me to become skilful at using the system. 6. I would find the system easy to use.
Complexity (Thompson et al., 1991)	The degree to which a system is perceived as relatively difficult to understand and use.	1. Using the system takes too much time from my normal duties. 2. Working with the system is so complicated. It is difficult to understand what is going on. 3. Using the system involves too much time doing mechanical operations (e.g. data input). 4. It takes too long to learn how to use the system to make it worth the effort.
Ease of Use (Moore and Benbasat, 1991)	The degree to which using an innovation is perceived as being difficult to use.	1. My interaction with the system is clear and understandable. 2. I believe that it is easy to get the system to do what I want it to do. 3. Overall, I believe that the system is easy to use. 4. Learning to operate the system is easy for me.

Source: Venkatesh et al. (2003)

This construct is the determinant of behavioral intention that is moderated by gender, age and experience (Venkatesh et al., 2003). The effect of effort expectancy is stronger on older women with relatively less experience (Venkatesh, 2000). This is because if the system offered less effort to learn, the offer could attract the older workers to use the new system and especially women who could overtake men in moderating the effect of behavioral intention (Venkatesh & Davis, 2000; Venkatesh & Morris, 2000). This is due to strong determination in effort of completing the task given, therefore, women more salient in influencing the intention to use new technology. The effect is significant only when the experience is less or limited. Meaning that if the new technology offered required less time to learn and easy to be used by following the instruction, users are more likely take the opportunity to use the system introduced and vice versa. This is because with less or no experience, if the new system is difficult to be applied, rejection from users is high. However, as experience increase and individual becomes more familiar with the technology, the effort to use the technology is expected to decline. Hence, effort expectancy is an important determinant on behavioral intention at the early stage of adoption (Agarwal & Prasad, 1999; Darsono, 2005; F. D. Davis, 1989; Venkatesh et al., 2003). In fact study shows that users perceived the technology as easier to use once they gain more knowledge and experience (Hackbarth, Grover, & Yi, 2003).

Effort expectancy in some case is sacrificed for performance expectancy as individual perceived benefits in the technology introduce (Anderson et al., 2006). This means that individual willing to spend time to learn the new technology as long as it is benefited to

their task. This is supported by several studies (Venkatesh et al., 2003; Wang et al., 2009) where aged group give an impact on effort expectancy as this group are willing to use modern technology but with less effort to learn the technology. In other case, the complexity is also reduced the intention to adopt the system introduced. The rejection is more if the system required advance and difficult learning level (Moore & Benbasat, 1991).

2.7 Social Influence and Intention to Use Technology

Social influence is the degree where individual perceives that other people believe is considered to be important to them to use the technology (Venkatesh et al., 2003). This factor influence behavioral intention by the way that individual believe others' opinion could result in the individual acceptance on the technology (Lee, Cerreto, & Lee, 2010; Lu et al., 2009). Originally this construct is from Rogers'(1995) that is introduced as image or social status, then being extended by Moore and Benbasat (Moore & Benbasat, 1991; Venkatesh & Davis, 2000) as subjective norms that is considered as equivalent as social influence. Social influence is constructed from subjective norm (Ajzen, 1991; Davis et al., 1989; Fishbein & Ajzen, 1975; Mathieson, 1991; Taylor & Todd, 1995a, 1995b); social factors (Thompson et al., 1991); and image (Moore & Benbasat, 1991). The details of the definitions and items tested are as shown in the Table 2.6 below.

Table 2.6
Social influence: Constructs, definitions and items

Construct	Definition	Items
Subjective Norm (Ajzen, 1991; Davis et al., 1989; Fishbein and Azjen, 1975; Mathieson, 1991; Taylor and Todd, 1995a, 1995b)	The person's perception that most people who are important to him think he should or should not perform the behavior in question.	1. People who influence my behavior think that I should use the system. 2. People who are important to me think that I should use the system.
Social Factors (Thompson et al., 1991)	The individual's internalization of the reference group's subjective culture and specific interpersonal agreements that the individual has made with others in specific social situations.	1. I use the system because of the proportion of coworkers who use the system. 2. The senior management of this business has been helpful in the use of the system. 3. My supervisor is very supportive of the use of the system for my job. 4. In general, the organization has supported the use of the system.
Image (Moore and Benbasat, 1991)	The degree to which use of an innovation is perceived to enhance one's image or status in one's social system.	1. People in my organization who use the system have more prestige than those who do not. 2. People in my organization who use the system have a high profile. 3. Having the system is a status symbol in my organization.

Source: Venkatesh et al. (2003)

As for the effect of age and gender on social influence, older women is moderated the relationship of this constructs with behavioral intention and usage of technology. This is because if the system is promoted by others on the benefits of the new technology, it could attract the older workers to use the new system. In addition, as women are highly sensitive to others' opinions, therefore, women are more salient in influencing the intention to use new technology. Thus, women is overtaken men in moderating the effect of behavioral intention (Venkatesh & Davis, 2000; Venkatesh & Morris, 2000). The effect is significant only when the experience is less or limited. Meaning that if others

promote on such advantages of the system, users are more likely to take the opportunity to use the system introduced and vice versa. This is because with less or no experience, if the new system is not known on the benefits provided and difficult to be applied, rejection from users is high.

Previous studies have reported use of systems in organizations as being either voluntary (Venkatesh, 2000; Venkatesh & Davis, 2000; Venkatesh et al., 2003) or mandatory (Brown, Massey, Montoya-Weiss, & Burkman, 2002; Venkatesh & Davis, 2000; Venkatesh et al., 2003) . This moderator is unique as it effect in social influence and significant under the mandatory condition only (Venkatesh et al., 2003). Under the voluntary basis, internalization and identification of the technology are affected behavioral intention and not social influence. Even though this variable is important and significant under the mandatory condition, but over time and as experience on the system increased, the role of this moderator erode and become non-significant. Based on the argument, the effect of social influence on behavioral intention is significant only in mandatory situation and reverse in voluntary situation (Venkatesh & Davis, 2000). In fact, this is proven in study by Anderson et al. (2006), where social influence is not significant under a voluntary basis condition. A negative significant of social influence on behavioral intention could also indicate the relationship in accepting a new technology (Lu et al., 2003). This is because the technology implemented is far from perfect at the early stage. Hence, the earlier adopter has no positive comment that could influence others to adopt the technology. Despite the mix effect of social influence, this construct

plays the most important role than other constructs (Lin & Anol, 2008). For instance, in circumstances where word-of-mouth is powerful and could give impact on usage intention greatly (Lin & Anol, 2008; Taylor & Todd, 1995b). Social influence is a possible influential factor in attributing to the acceptance of new technology. In some cases, in order to please the supervisor who strongly promotes the use of technology, acceptance towards the technology is created even without any personal competence or value in the technology (Lee et al., 2010).

2.8 Facilitating Conditions and Intention to Use Technology

Facilitating conditions is the degree to which a person believes that the organizational and technical infrastructure is in place to support the use of the technology (Venkatesh et al., 2003). This determinant is formulated from three (3) previous constructs. The constructs are perceived behavioral control (Ajzen, 1991; Taylor & Todd, 1995a, 1995b); facilitating conditions (Thompson et al., 1991); and compatibility (Moore & Benbasat, 1991) as the definitions and items constructed listed in the Table 2.7 below.

Table 2.7
Facilitating conditions: Constructs, definitions and items

Construct	Definition	Items
Perceived Behavioral Control (Ajzen, 1991; Taylor and Todd, 1995a, 1995b)	Reflects perceptions of internal and external constraints on behavior and encompasses self-efficacy, resource facilitating conditions and technology facilitating conditions.	1. I have control over using the system. 2. I have the resources necessary to use the system. 3. I have the knowledge necessary to use the system. 4. Given the resources, opportunities and knowledge it takes to use the system, it would be easy for me to use the system. 5. The system is not compatible with other systems I use.

Table 2.7 (Continued)

Construct	Definition	Items
Facilitating Conditions (Thompson et al., 1991)	Objective factors in the environment that observes agree make an act easy to do, including the provision of computer support.	1. Guidance was available to me in the selection of the system. 2. Specialized instruction concerning the system was available to me. 3. A specific person (or group) is available for assistance with system difficulties.
Compatibility (Moore and Benbasat, 1991)	The degree to which an innovation is perceived as being consistent with existing values, needs and experiences of potential adopters.	1. Using the system is compatible with all aspects of my work. 2. I think that using the system fits well with the way I like to work. 3. Using the system fits into my work style.

Source: Venkatesh et al. (2003)

The unique characteristic of the facilitating conditions is that the construct is found to be non-significant with the existence of performance expectancy and effort expectancy in predicting intentions (Venkatesh et al., 2003). In fact, the empirical results of the UTAUT model supported that facilitating conditions has a direct influence on usage behavior in addition to not on the behavioral intention. Even though the variable is not significant in determining behavioral intention, but several scholars remained the factor to be tested for the purpose of discussion (Taylor & Todd, 1995b). This relationship is modified by age and experience and the effects are increasing with older age and more experience (Venkatesh et al., 2003). This is via preparing a complete equipment to support the system where the offer could attract the older workers to use the new system. However, in facilitation conditions, the experience plays an important role. All the equipment and facilities available could only be used if users have experience in usage of those appliances. Hence, usage is higher not only because of the facilities conditions provided

but due to experience in handling that equipment. Thus, with no experience, this variable is affected the result.

In a study by Brown et al. (2010), the effect of facilitating conditions that considered environment characteristics is directly influence the intention to use the technology introduced. In fact, the technology-facilitating conditions that concerned on compatibility with other technologies has a greater effect than time and money, *i.e.* resource-technology conditions (Jiang, Hsu, Klein, & Lin, 2000; Liang & Lu, 2013; Taylor & Todd, 1995b; Venkatesh, 2000). Thus, the element of compatibility is more important rather than resource required by the technology in considering the intention to use the technology.

2.9 Attitude and Intention to Use Technology

Attitude is referring to a learned predisposition to respond consistently favorable or unfavorable to an object. This element of attitude is affected by the information and experience. The construct of attitude toward using technology is from attitude toward behavior (Davis, 1989; Fishbein & Ajzen, 1975; Taylor & Todd, 1995a, 1995b); intrinsic motivation (Davis et al., 1992); affect toward use (Thompson et al., 1991); and affect (Compeau & Higgins, 1995b) as the details are depicted in the Table 2.8 below.

Table 2.8
Attitude toward using technology: Constructs, definitions and items

Construct	Definition	Items
Attitude Toward Behavior (Davis et al., 1989; Fishbein and Azjen, 1975; Taylor and Todd, 1995a, 1995b)	An individual's positive or negative feelings about performing the target behavior.	1. Using the system is a bad/good idea. 2. Using the system is a foolish/wise idea. 3. I dislike/like the idea of using the system. 4. Using the system is unpleasant/pleasant.
Intrinsic Motivation (Davis et al., 1992)	The perception that users will want to perform an activity for no apparent reinforcement other than the process of performing the activity per se.	1. I find using the system to be enjoyable. 2. The actual process of using the system is pleasant. 3. I have fun using the system.
Affect Toward Use (Thompson et al., 1991)	Feelings of job, elation or pleasure; or depression, disgust, displeasure, or have associated by an individual with a particular act.	1. The system makes work more interesting. 2. Working with the system is fun. 3. The system is okay for some jobs, but not the kind of job I want. (R)
Affect (Compeau and Higgins, 1995b; Compeau et al., 1999)	An individual's liking of the behavior.	1. I like working with the system. 2. I look forward to those aspects of my job that require me to use the system. 3. Using the system is frustrating for me. (R) 4. Once I start working on the system, I find it hard to stop. 5. I get bored quickly when using the system. (R)

Source: Venkatesh et al. (2003)

The direct relationship between behavioral intention and usage of the technology is known. In addition to that, the behavioral intentions are motivational factors that capture how hard people are willing to try to perform a behavior (Ajzen, 1991). However, there are little in study on the relationship (Sheppard et al., 1988; Venkatesh et al., 2003). In fact, Venkatesh et al., (2003) also raise the issue of the need to study on this little known relationship. This is because most of the time, it is assumed that intention to use could

result in positive outcome. In this study, the outcome is revealed with poor usage of tax e-filing among tax agents/preparers in Malaysia, however, the relationship of intention and usage is unknown and remained to be studied.

2.10 Perceived Value and Intention to Use Technology

Perceived value is a consumer's overall assessment of the utility of a product based on perceptions of what is received (*i.e.* benefits) and what is given (*i.e.* sacrifices) (McDougall & Levesque, 2000; Zeithaml, 1988). This means that the acceptance or adoption of any technology depends on the value in returned. That is why Urbany, Beaden, Kaicker and Smith-de Borrero (1997) discussed that technology is willingly be accepted if it is perceived to have a higher value. This is supported in the case of m-Internet in Taiwan where the effect of perceived value on behavioral intention is significant (Wang & Wang, 2010). As a matter of fact, it is confirmed and supported in the previous economics and marketing researches (Soltani & Gharbi, 2008). In Taiwan for example, the fact is tested by offering the m-Internet at lower usage fee. This is in a way as a returned in value to accept the technology introduced which could reflect users' belief about adoption intention.

The popularity of perceived value in retailing (Sweeney & Soutar, 2001), website (Dodds, Monroe, & Grewal, 1991; Parasuraman & Grewal, 2000) and marketing (Anderson & Srinivasan, 2003; Chen & Dubinsky, 2003; Cronin, Brady, & Hult, 2000)

researches shows it is a stable construct in predicting buying behavior. Indeed, it is considered an important factor that could influence customer satisfaction and behavioral intentions (Cronin, Brady, Brand, Hightower, & Shemwell, 1997; Swait & Sweeney, 2000). Basically, perceived value is divided into three (3) dimensions which are emotional value; social value; and functional value (Sweeney & Soutar, 2001). Emotional value is an affective feelings generated by a product. Social value is derived from a product's ability to enhance the consumer's social self-concept. Functional value is divided into two (2) parts, *i.e.* price (short- and long-term costs) and quality (product performance). There are two (2) additional dimensions introduced by Sheth, Newman & Gross (1991) who includes epistemic value (*i.e.* ability to arouse curiosity, provide novelty or satisfy a desire for knowledge) and conditional value (*i.e.* result of a specific situation or set of circumstances facing the decision maker).

The influence or effect of this variable on intention and behavior revealed a mix result. For instance, in a case of quality, the higher the emotional value and quality of a product, the product is positively influenced the buying behavior (Ruiz-Molina & Gil-Saura, 2008). Even in a service, customers' perceptions on the quality is higher if the service increases in value (Jackie, 2004). Even though price is considered as the key measure to represent sacrifices to obtain product or service (Jackie, 2004), yet price and social value show no relationship with customer's attitude (Ruiz-Molina & Gil-Saura, 2008). This is possibly due to other non-monetary value, *i.e.* time, physical and psychic effects which also concerned as value to forgo. Unfortunately, a study by Jackie (2004), stressed on a

negative effect of monetary as well as time costs on perceived value. However, the study not denied on the important and strong effect of the element of perceived value on intended post-purchase behavior than on customer satisfaction (Dodds et al., 1991; Jackie, 2004; Parasuraman & Grewal, 2000). This means that the tendency to repurchase and recommend to others is higher if customer's perceived the value of product or service increases. Indirectly, the fact also supports the significant association of customer satisfaction and customer loyalty (Chang, Wang, & Yang, 2009; Hu, Kandampully, & Juwaheer, 2009). Undoubtedly, the satisfaction and loyalty is certainly depended on the perceived value. Thus, satisfied customers most likely refuse to repurchase on the same website if the value offered is not at the best deal. The customers is definitely turn to other website for a better value (Anderson & Srinivasan, 2003).

In overall perceived value concerned on the value customers perceive to receive or experience by using a service (Bettman, Luce, & Payne, 1998) and satisfied with the total experience (Vandermerwe, 2003). In addition to that, a tradeoff between quality or benefits of the service and the price paid also a matter of perceived value. However, on the other part, product attributes, attribute performance and consequences arising from the use to achieve customer's goal and satisfaction (Woodruff, 1997) also are the major concerned of perceived value. Hence, researchers concluded that somehow perceived value affect the future intentions in making decision to consider any acceptance via the consideration on value of money (Bolton & Drew, 1991) as well as convenience in addition to task fulfillment (Anckar & D'Incau, 2002). In fact, many researchers

confirmed and empirically support on the direct relationship between perceived value and behavioral intention in buying decision (Al-Sabbahy, Ekinci, & Riley, 2004; Dodds et al., 1991; Grewal, Krishnan, Baker, & Robin, 1998; Netemeyer et al., 2004; Petrick & Backman, 2002).

Even though most of the studies are applied on marketing, retailing and website or online buying behavior, yet there is a lack of study on technology acceptance behavior. However, the direct relationship of perceived value and intention using the service or technology is the basis on tax e-filing acceptance among tax agents/preparers' study. The same effect is predicted in tax e-filing context where if tax agents/preparers perceived there is valued in terms of design characteristics of the new system could ease in job performance, the intention to use the system is certainly increase. The condition is also applied if incentive and support given on the technology that indirectly could enhance the intention to use the system introduced.

2.11 Moderating Variables

The function of moderating variables is supported in few studies where the frameworks is better explained (Lu et al., 2009; Venkatesh et al., 2003). Veritably, the importance of these variables is discussed in TAM and TPB too. Age, gender, experience and voluntariness are cited as the important moderators in few studies (Anderson et al., 2006; Lu et al., 2009; Venkatesh et al., 2003). Indeed the results revealed is supported and

consistent with the other study using UTAUT model (Venkatesh et al., 2003). These moderators usually tested on individual whether students, employees or non employees who integrate technology for own use, *i.e.* mobile phone, instant message, teaching materials and internet application. Age is one (1) of the key modifiers of performance expectancy, effort expectancy, social influence and facilitation conditions (Venkatesh et al., 2003). Theoretically, gender could affect performance expectancy, effort expectancy and social influence (Venkatesh et al., 2003). In today situation, study on gender seems inappropriate due to inequalities between the numbers of male and female in the population. This inequality indirectly affected the results or outcomes of studies conducted. The difference in terms of gender is very small and subtle in most areas (Lu et al., 2009). In China for example, regardless of the children's gender, the same full and equitable family investments are allocated for the children's future. Besides that, study on education expenditure also revealed no significant differences in terms of gender. Experience plays a role of moderator for effort expectancy, social influence and facilitation conditions (Venkatesh et al., 2003). Voluntariness moderator is unique as it effect in social influence and significant under the mandatory condition only (Venkatesh et al., 2003). Given that the tax e-filing in Malaysia is on voluntary context, thus excluding this voluntariness variable would be necessary.

The tax e-filing system that requests to be adopted by tax agents/preparers is a more complex technology as it related to company's financial data for a particular accounting period. As the system increasingly become complex and central to managerial;

considering employees decision making; and towards work processes, there is a need to have a substantial changes to organizational business processes. This is because implementation of such complex and disruptive system could lead to severe resistance from employees (Davis & Venkatesh, 1996). Thus, there is a need to integrate a new pushing factor to encourage and enhance the behavioral intention to accept the new technology. The volume of transaction, design characteristics, user participation, incentive alignment, training as well as organization and peer supports are among the possible modifier to influence the determinants of technology acceptance and behavioral intention.

Therefore, all the original moderators (age, gender, experience and voluntariness) are treated as constant moderators in this study. Taken into consideration the limitation of the UTAUT model that unable to assist in designing interventions and foster adoption (Venkatesh & Davis, 2000; Venkatesh & Davis, 1996), new moderators are introduced in this study. The purpose is to be able in explaining instead of predicting the usefulness of those variables. The moderators are volume of transaction, design characteristics, incentive alignment, user participation, training as well as organization and peer supports. Originally, those variables except volume of transaction are introduced and proposed as interventions in TAM3. However, in this study due to the purpose, to study on the relationship of the variables and not on time and process, interventions are introduced as moderators.

2.11.1 Volume of transaction

Volume of transaction is referring to the number of clients or return forms required to be completed within the assessment period. This factor is seen as important in influencing users to comply with technology. Even though there is no empirical evidence on this matter, facts revealed that one (1) of the reason users accept e-filing is due to increasing in workload. In research on Certified Practicing Accountant (CPA) in the United States, big practitioners comply with e-filing more than small practitioners. Statistically, it is also supported where corporate return forms using e-filing is 16 per cent in year 2003 (Anderson, Fox, & Schwartz, 2005). The practice of using technology in taxation is not new as tax preparation software have been introduced since 1993, but the submission of the return form is done manually. This is because of the clients' requirement who would desire to have physical copy of return form as well as proof of mailing (Warkentin, Gefen, Pavlou, & Rose, 2002). In 1997, fully utilized the e-filing system among tax practitioners have pushed the percentage of using the tax e-filing to increase. The acceptance is due to the advantages of e-filing obviously more than the manual system, *i.e.* more efficient; save time and money; reduce number of errors; attributable to the one (1) time early of figures; and the checks is performed by tax preparation software. As a matter of fact, the tax practitioners become more efficient, effective, progressive and technologically sophisticated. In addition to that because of a large number of clients meaning to have huge volume of transactions, e-filing is considered worth and smart decision in handling clients. In fact, this volume of transaction is seen as one (1) of the

reason that influences decision in accepting technology among tax practitioners in the United States. Indirectly, e-filing help in reducing the labor costs; reduce the volume of paperwork; paperless and saves paper, toner and file storage costs that benefits the company and clients in terms of cost saving (Anderson et al., 2005; Saman & Haider, 2013).

Strengthening the fact, besides the big companies, the United States Judicial Courts also has introduced the e-filing system. This is because the e-filing system could help in reducing the ever-growing caseloads. In average, 35 per cent of documents are filed electronically in federal courts, whereas in bankruptcy courts cases are closer to 60 to 70 per cent (Krause, 2003). The high volume of transaction or cases is one (1) of the factors that led the courts to embrace the technology. Indeed, more than 70 per cent judges, lawyers and clerks supporting the implementation of the e-filing system in handling the increasing of caseloads as well as volume of paperwork that indirectly improve in job performance (Anonymous, 2005). As a matter of fact, judges witness that courts benefited a lot from the e-filing system as it could improve access to information; increase efficiency for clerks; and reduce the amount of storage needed for court records. Besides that, due to simple and available software as well as other facilities needed, *i.e.* PDF software, scanner and computer, e-filing is seem as the best alternative to get rid from the increasing problem of managing caseloads. In addition, less effort is required to educate the related parties has attract the users to accept the system introduced.

The significant effect of volume of transaction that could influence the acceptance of e-filing system is well known. However, there is no evidence or study conducted on this matter to conclude the relationship of this element towards a behavioral intention to accept a new technology. The reports from the United States clearly pictured the scenario of accepting e-filing system that is due to the ability to improve performance expectancy and less effort requirement with facilities available. Unfortunately, support on the level of significant effect of volume of transaction on behavioral intention is empirically unknown. Thus, there is a need to conduct study to test the element of volume of transaction on behavioral intention for future reference.

2.11.2 Design characteristics

The element of design characteristics is important in influencing individual to accept or adopt any new technology. Lack of attention on this element is not only failed to attract new adopter but also could reduce the number of existing adopter (Lu et al., 2009). Statistically, there is prove as reported in a study by Lu et al. (2009) where the number of netcitizens who surf internet via their mobile phones reached 73.05 million in 2008, however, in 2009, China faced an obvious drop. Thus, the result revealed that design characteristics are important in order to attract and maintain youngsters in China to keep updated and attached to the technology. Easy-to-navigate user interfaces is seem to be helpful, especially for the older citizens in urban China. Besides that, improving technical functions, modifying interface designs and offering mobile services as a package could

help in enhancing the intention to use the technology (Lu et al., 2009). Hence, substantial effort is needed to ensure each demographic group could benefit the same technology.

Design characteristics of a system could positively influence user acceptance and indirectly ensure the success of the technology implementation (Al-Natour, Benbasat, & Cenfetelli, 2006; Darsono, 2005; Davis & Bostrom, 1993; DeLone & McLean, 2004; Hong, Thong, Wong, & Tam, 2002; Leach, Rogelberg, Warr, & Burnfield, 2009; Wixom & Todd, 2005). Scholars (Hong et al., 2002; Igbaria et al., 1995; Lim & Benbasat, 2000; Venkatesh & Bala, 2008) suggest that information-related characteristics and system-related characteristics of a system could influence the determinants of perceived usefulness and perceived ease of use respectively. Thus, if a system could provide users with relevant information on time, accurate, understandable and help in a better decision making (Speier, Valacich, & Vessey, 2003), obviously users perceive the system as greater job relevance, high output quality and greater result demonstrability. In addition, a user-friendly system make user to feel the great control over the system, thus could enhance users' self-efficacy toward accepting the system (Wixom & Todd, 2005). Hence, design characteristics are important element in company's technology system design as the system inherently difficult to understand and applied. Indirectly, the design of the tasks and context of the technology could influence the performance and effort expectancy which in turn could influence the adoption and use of the system (Brown et al., 2010). In addition to the design characteristics that ease of use and useful, users are alternatively choose the system if the value offered benefited them (Anckar & D'Incau,

2002; Anderson & Srinivasan, 2003; Anonymous, 2005). Despite the significance effect of design characteristics on technology acceptance, the influence on tax e-filing system remained unknown. This is because not much research emphasized and discussed on the importance of this aspect in designing the tax e-filing system. The facts on characteristics of design could support both change and continued use of the software systems is essential. Even though plenty of research had undertaken on this matter, records on the outcomes still few (Kelly, 2006; Kemerer & Slaughter, 1999). In fact, the results varied to the type of questions or scope of studies. Most of the time the focus is on the software maintenance process (Anton & Potts, 2003; Eick, Graves, Kerr, Marron, & Mockus, 2001; Graves, Kerr, Marron, & Siy, 2000) and few on software design as good practice.

2.11.3 User participation

User participation is refers to the assignments, activities and behaviors that users of their representatives perform during the systems' implementation process (Barki & Hartwick, 1994). There are four (4) dimensions in user participation which are users' hands-on performance of activities; responsibilities; relations with information system; and communication with information system staff and senior management (Barki & Hartwick, 1994; Subramanyam, Weisstein, & Krishnan, 2010). This element is more important in a complex technology system as the presence of this group could form judgments about job relevance, output quality and result demonstrability. Indirectly, the participation could enhance the performance of the system to be suited with task

requirement. Participation and involvement of users in system development also form opinions regarding the social pressure that could influence others to accept or refuse the technology introduce (Mathieson, 1991). This is an important element as the system and content are differently viewed by different individuals. Furthermore, physical participation on system designing help to reduce anxiety related to the system that potentially enhance favorable perceptions of external control, perceived enjoyment and objective usability (Venkatesh & Bala, 2008). This is due to users having a better understanding on the system features, organizational resources and support pertinent to the system.

The importance of user participation in development or improvement in any systems, policies or decisions are recognized in several areas of concern such as mental health (Elstad & Eide, 2008; Ram, Grocott, & Weir, 2007; Simons et al., 2006; Svensson & Hansson, 2006; Tee et al., 2007), public services (housing and community care) (Simmons & Birchall, 2005), information technology system (Spears & Barki, 2010; Subramanyam et al., 2010; Wagner & Piccoli, 2007) and many others (Healy & Darlington, 2009; Wilson, 2010). Unlike software or information system development, mental health service, public services, child protection service as well as health-care service are concerned on the development of policies, devices or modules that is useful for future reference. In creating those materials, user participation is crucial especially from those who experience the problems of mental health, child abuse, consumers and patients. Participating from these traumatic individuals is sometimes facing some

challenges and difficulties in terms of participation and sharing information (Elstad & Eide, 2008; Healy & Darlington, 2009) and could possibly end up with negative feedback. The same response also is received from the consumers or patients who satisfied with the services received (Simmons & Birchall, 2005). Hence, user participation is increased and informative if the services provided were not satisfied, less alternative as well as not as expected by the users. However, undeniable the information shared from these group are important in identify strategies for supporting learning in practice (Tee et al., 2007); producing devices that are safe, usable, clinically effective and appropriate (Ram et al., 2007); developing child protection practice (Healy & Darlington, 2009); and emerge a best practice in health-care procedures (Wilson, 2010).

In terms of business or software development, involving users to participate in project software development in particular is considered a critical factor in ensuring the successfulness of the implementation of the software (Subramanyam et al., 2010; Wagner & Piccoli, 2007). This is due to multiple benefits incorporated with the participation are benefited by the software developers and among others could increase user accountability on system's design (Wagner & Piccoli, 2007); improving software quality (Spears & Barki, 2010; Subramanyam et al., 2010); and also increasing user satisfaction and acceptance (Subramanyam et al., 2010). Thus, could improve workforce commitment, reduced employees resistance to change and increase job satisfaction (Wagner & Piccoli, 2007). Indirectly, enhance the performance of the employees in completing the tasks assigned. As a matter of fact, user involvement in security risk management has raised

organizational awareness of security risks and controls (Spears & Barki, 2010). Hence, business users could add value to the security risk management development and be able to contribute to more effective security control development and performance. On the other hand, user participation could be negatively influence development or maintenance of project performance (Subramanyam et al., 2010). The participation from users could make the process more difficult, lengthy and less effective due to their high or unattainable expectations. Although, many academic research on user engagement or participation, yet there is lack of commensurate work on the practicalities of such engagement. By conducting this study, many of the theoretical concepts of user engagement is explored and the practical issues as well as challenges that are raised where undertake on user engagement in tax e-filing. The effect of user participation in e-filing system development would remain unclear if study on this aspect is not conducted. The participation could possibly be positive or negative result as the influence of user participation in other areas gives a mix results and effect on development performance.

2.11.4 Incentive alignment

In a system development process, software engineer who has responsibility on system characteristic and technology acceptance with the feature of perceived usefulness, perceived ease of use and user satisfaction are not the only individual that need to be considered. There is also a need to take into account the aspect of incentive alignment (Ba, Stallaert, & Whinston, 2001). This is because even though the first two (2)

dimensions are considered, but if employees find that the system features and capabilities of the system is not aligned to their interest and incentives, the acceptance among the employees is failed. Hence, the technology itself without any incentive aligned to the acceptance could lead to a negative attitude toward the technology introduced. Incentive alignment does not mean organizational rewards for using a system only, but it could also be an individual's perception on job-fit and perceived value of technology adopted (Ba et al., 2001). The individual's perception on the perceived benefits of the technology to other work units instead, is lead to perception of lack of incentive alignment and result in low acceptance on the technology. In a way, incentive alignment which is an important extrinsic reward could influence subjective norm, image, reduce anxiety as well as increase perceived enjoyment. This important extrinsic reward is considered important drivers of intrinsic motivations (Deci, Koestner, & Ryan, 1999; Ryan & Deci, 2000).

The importance of incentive alignment is not limited to the system development, but also considered in other areas such as business (Ericson, 2011; Saxe, 2006), construction (Ling, Rahman, & Ng, 2006; Rahman & Kumaraswamy, 2008), marine (Brandt & Svendsen, 2009) and healthcare (Safavi, 2006; Teutsch & Berger, 2005). No matter how difference is the area of study, yet the incentive alignment is not ignored as one (1) of the element to improve performance or increase productivity. In fact, there is significant relationship between incentive alignment and performance, productivity as well as in achieving a mutual agreement between parties. The incentive alignment is indirectly increase or enhance appropriate delivery of services (Teutsch & Berger, 2005); improve

performance (Safavi, 2006); increase productivity and assist in achieving goals as required (Rahman & Kumaraswamy, 2008). However, the trend of changes in incentives is not reflected the changes made in performance, *i.e.* the sharp changes in incentive policy have not necessarily force sharp trade-off in the market (Ericson, 2011).

Even though most of the time incentive is reflecting dollar or financial values, but there are also in other forms such as in units of health (Teutsch & Berger, 2005), subsidies (Brandt & Svendsen, 2009) and equitable risk allocation (Rahman & Kumaraswamy, 2008). The importance of incentives alignment is arising as most of the companies and institutions believed of its capacity that could improve efficiency (Brandt & Svendsen, 2009; Safavi, 2006). As a matter of fact, there are models created in achieving this incentive alignment strategies such as traditional shared risk; pay-for-performance contracting; physician gainsharing; private-payer physician gainsharing; service-line gainsharing; and participating bond transactions (Safavi, 2006) for the healthcare department. In the construction side, there are contractual incentives and non-contractual incentives models (Rahman & Kumaraswamy, 2008). Regardless the model and area, the aim is to achieve the objectives and goals. For instance, the healthcare department hopes to achieve health in public health and healthcare; and marine with the aim to agree on perceive profitability between fishermen and biologist in terms of livestock's size. In the construction, the aim is to derive at designing procurement arrangements; selecting and mobilizing different project team's members; and adjusting the conditions of the contract that has equitable risk allocation for all related parties.

In business, long- or short-term incentives is useful in accomplishing a range of business objectives (Ericson, 2011) which indirectly encourage value-creating in business decisions. In fact, it is well accepted in business environment where specific result in a human endeavor is obtained with the allocation of incentives alignment to the goals (Saxe, 2006). The actual receipts compensation, *i.e.* normal salaries without any extra incentives given on a particular supplementary tasks or contracts is unlikely success in generating additional to the aggregate total business income. However, it is achieved if the related parties were given incentives either in terms of financial or nonfinancial values. Based on the arguments, the same situation is predicted in the case of e-filing, where lack of study is conducted to approve the relationship of incentive alignment of adopting e-filing and the intention behavior to accept the system in completing return forms on behalf of clients. It is likely that, without any incentives alignment to the intention behavior, even though e-filing is seems to help in job performance; reduce effort in completing return forms; the benefits; and opinions by others on the usefulness of the system, tax agents/preparers would reluctant to accept the e-filing system. Thus, a balance or equitable incentive alignment between companies, tax agents/preparers and clients need to be achieved in order to increase productivity, profitability as well as in number of potential clients.

2.11.5 Training

The element of training is extensively studied by many researchers in various areas, *i.e.* education (Wedderburn, Scallan, & Leach, 2010), sports (Armstrong & Weidner, 2010; Borresen & Lambert, 2009), health care (Macurik, O'Kane, Malanga, & Reid, 2008) and different industry or workplace (Byun & Mills, 2011; Cullen, 2011; Lee, 2010; Lowe et al., 2007). The research discussed from a diverse angle such as modes of training, phases of training, learning set guidelines, training programs as well as e-training or e-learning (Byun & Mills, 2011; DeVoge & Bass, 2007; Hung, 2010; Keith, Richter, & Naumann, 2010; Lyon-Maris & Scallan, 2007; Macurik et al., 2008; Newton & Doonga, 2007; Toogood, 2008). Undeniable, research on modes and effectiveness of the training in the context of information technology also rich (Davis & Bostrom, 1993; Davis & Yi, 2004; Venkatesh, 1999a; Venkatesh & Speier, 1999). As a matter of fact, a total of 47.8 per cent of the top 1,000 organizations is considered training and the development of it as a highest priority (Chen, Holton, & Bates, 2005). This is because of the contributions that training could improve work performance as whole (Hung, 2010).

The previous scholars also agreed that training plays a critical role in enhancing technology adoption and use (Venkatesh, 1999b; Venkatesh & Speier, 1999; Wheeler & Valacich, 1996). This is because with the assist from training, less effort is required in learning and understands the technology accepted. Scholars are empirically proved the significant relationship of training is effectively increased employees' knowledge and

also impacted on practice (Allen, McDonald, Dunn, & Doyle, 1997; Berryman, Evans, & Kalbag, 1994; Dench, 2005; Oorsouw, Embregts, Bosman, & Jahoda, 2010). The impact is the willingness of those trained employees to practice what have been learned. Thus, training is need not only in the setting of high staff turnover where new recruitment occurs, but also in a setting where changes in system or technology been implemented (Strouse, Carroll-Hernandez, Sherman, & Sheldon, 2003).

Designing training instructions and mode is important. Integrating multiple roles and designing an identical training for specific context for related group of individual role is crucially required (DeVoge & Bass, 2007). This is to ensure that the concepts and tasks of the training are aligned with the objectives of the performance of the job tasks. Thus, the evaluation of those training implemented also need to be taken into consideration in ensuring the continuous improvement in employees' skills as well as knowledge (Hung, 2010; Oorsouw et al., 2010). There are various types of training mode and among others are traditional training (Cullen, 2011), live training (Macurik et al., 2008), video training (Macurik et al., 2008), workshop training (Toogood, 2008), on-site training (Toogood, 2008), guided training and active/exploratory training (Keith et al., 2010). The introduction of traditional training approach alone is not adequate enough to ensure the effectiveness of the training conducted (Cullen, 2011; Lowe et al., 2007). Therefore, creativity in blending and combining the training or learning mode is crucial in facing complex working environments (Cullen, 2011; Lee, 2010).

Besides the form of training, modes of training such as game-base or traditional training also plays a big role in influencing users to accept the technology implemented (Venkatesh & Speier, 1999). Findings also indicated that training could help users to develop favorable perceptions on perceived usefulness and perceived ease of use. This is important as users could simply reject the technology due to the nature of the technology, *i.e.* complex, but effective training could alleviate the negative reaction. Even though, the findings of previous research are focused on the modes of training either traditional- or game-base, yet there is still lack of research on the effect of training as a pushing factor to improve behavioral intention in accepting any new technology especially tax e-filing. This gap remained to be study and evidence of this factor is significant for future decision making in any introduction of new technology or services.

2.11.6 Organizational and peer supports

Organizational support is a form of formal or informal activities or functions to assist employees in using a new system effectively (Venkatesh & Bala, 2008). While peer support is referring to different activities or functions performed by coworkers that could help an employee effectively use a new system (Venkatesh & Bala, 2008). The support from organization could be in various forms such as providing necessary infrastructure; creating dedicated helpdesks; hiring system and business process experts; and sending employees to off-the-job training. Prior research has suggested that employee' perceptions regarding organizational support that is facilitating conditions or perceptions

of external control (Taylor & Todd, 1995b; Venkatesh, 2000; Venkatesh et al., 2003) and perceive value (Swait & Sweeney, 2000) could lead to greater user acceptance of new system. This element is considered a key role in determining perceived usefulness, perceived ease of use and perceived value. For instance, experts could assist employees simplify certain aspects of a new system, thus help in increased job relevance, output quality and result demonstrability of a system.

The concept of organizational support is based on organizational support theory (Eisenberger, Huntington, Hutchison, & Sowa, 1986; Rhoades & Eisenberger, 2002). Basically, there are two (2) dimensions: valuation of employees' contribution and employees' well-being. Thus, the employees perceived the organization's appreciation of their hard work and whether their well-being has been taking care or not. Peer support on the other hand, is another important element for greater user acceptance of a system and could influence the determinants of perceived usefulness and perceived ease of use (Jasperson, Carter, & Zmud, 2005). However, there is little research on role of peer support in the context of technology adoption. Via formal or informal training from peer support, users' understanding of a system is enhancing. This is by approaching peers on job relevance, output quality and result demonstrability of a system. Besides that, the modification and enhancement activities performed by peers also could increase job relevance of a system, improve the output quality and reduce anxiety to the system.

Peer support is also influenced subjective norm and image associated with accepting a system if coworkers are favorable toward the new system via social influence processes (Venkatesh & Davis, 2000). In fact, if the group received support in the aspects of the technology to use and guidance on how to use, the tasks are completed in less time and are more satisfied (Brown et al., 2010). The element of organization and peer supports in tax e-filing system implementation is not seriously discussed by any researchers worldwide. Thus, there is no empirical evidence on the significance of this supports on system acceptance which is necessary.

2.12 Summary

One (1) of the strong points of the TAM model is its simplicity. TAM is very intuitive, is easy to test and has been applied in many difference form of technology including communication tools, office applications, groupware, decision support systems and specialized business systems (Lee et al., 2003; Mathieson, 1991). Even though not as concise as TAM, the UTAUT model on the other hand, explains user acceptance in a more realistic manner than the two (2)-construct TAM models. Thus, by extending, modifying and improving upon existing technology acceptance models, the UTAUT model could also at this stage serve as a benchmark against all future models, much like TAM did over the past few decades.

Although UTAUT seems to provide a fuller empirical support on understanding user intention and behavior, but the situation of voluntariness in tax e-filing could give different ideas as well as effect for this study. Hence, certain modification and extension are needed in this study where it could provide more reflective guidance to policy-maker and enable to promote tax e-filing in Malaysia that is discussed in detail in chapter three (3). The following chapter is also explained on the methodology as well as proposed the research framework.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

In chapter two (2), the integrated technology acceptance model with expansion, modification and alteration is discussed. This chapter would certainly look at the methodology relevance to this research. The research methodology chapter covers the research conceptual framework as well as the development of hypotheses; the process used to obtain the pool of respondents; explains the research methods used; as well as to explore the reliability and validity of the survey instruments.

3.2 Research Conceptual Framework

The dependent variable of this research is behavioral intention of accepting e-filing technology. Behavioral intention is the degree to which the tax agents/preparers intend to use the technology of e-filing in preparing and submission of clients' return form (Davis, 1989; Venkatesh et al., 2003). It is crucial to study on the intention as employees and organization acceptance could improve technology efficiency and effectiveness (Anderson et al., 2006). The independent variables are performance expectancy, effort expectancy, social influence, facilitating conditions and perceived value. In addition to the independent variables, the related moderating variables to the research conceptual

framework are volume of transaction, design characteristics, user participation, incentive alignment, training as well as organization and peer support. Considering the interventions introduced in TAM3 as moderators is purposely to test the significant of those variables in the UTAUT model. In fact, Venkatesh (2003) give a thought on the design of interventions in UTAUT model as it could give an idea for managers in assessing the intention of adopting new technology introduced and help in increasing user acceptance. Thus, the introduction of those variables as moderator could provide explanation on the effectiveness and efficiency of the variables if introduced as interventions in a future study.

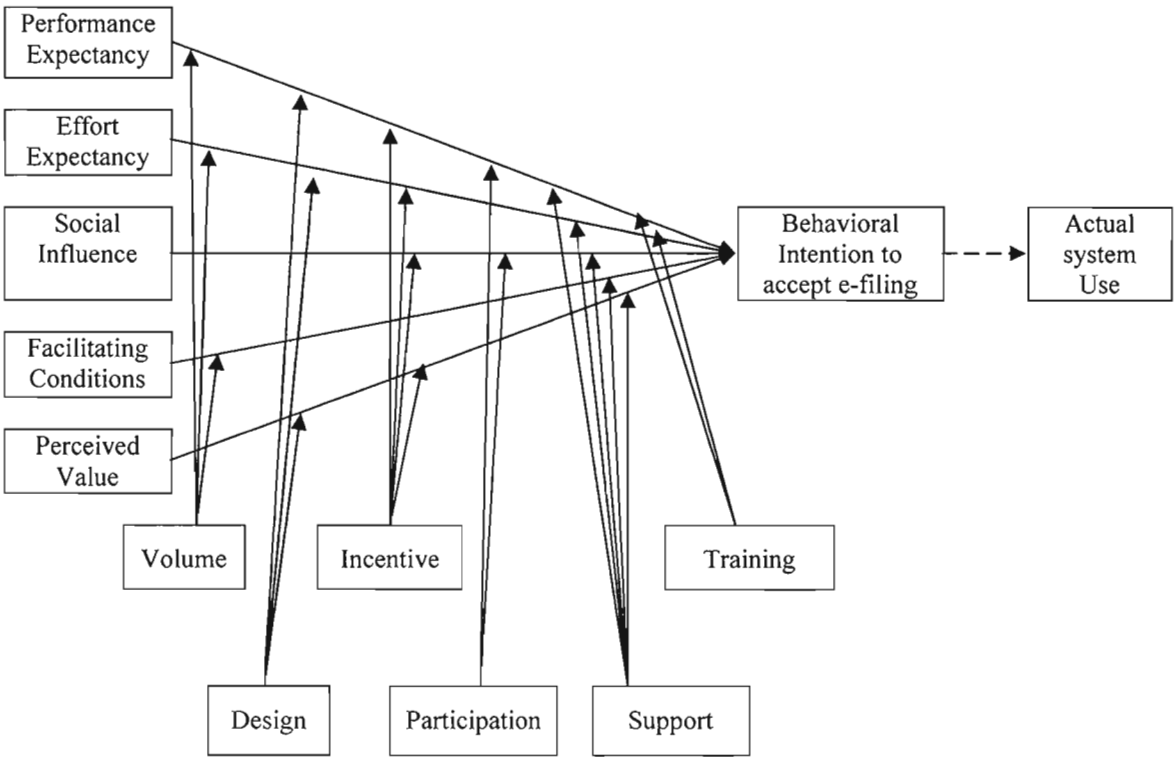

Figure 3.1
The proposed research framework
Source: Adapted from UTAUT and TAM3 (Venkatesh & Bala, 2008; Venkatesh et al., 2003)

Figure 3.1 if compared to the original UTAUT model, would depict some differences. The extension and modification made on the original model is to support the study on the determinants of tax e-filing acceptance among Malaysian tax agents/preparers. In order to support this study, there are factors or variables as well as moderators that are split off into new factors, collapsed into existing factors or to form a new factor.

In this research framework, the "voluntariness" factor is removed because the nature of e-filing in Malaysia is not mandated to the tax agents/preparers. In general, every individual or tax agents/preparers is free to choose whether to use or not the technology introduced by IRB. In addition, the acceptance or rejection of the technology indirectly is influenced by the management's instruction. Due to less of freedom to choose, the "voluntariness" factor seems less influenced to the intention to use the technology. Based on the same basis, where tax agents/preparers were acts as intermediate between company and client, "age" and "gender" factors also are dropped from the original UTAUT model. This is because the factor has less or no influence on the intention to use. In fact, the moderator of age, gender and experience are proved by many researchers on the constant results of these variables. This study is focusing on the intention to use technology. Hence, the actual behavior on technology acceptance is not discussed. All the existing moderators are dropped from this study as tax e-filing system is increasingly become complex and central to managerial; considering employees decision making; and towards work processes, there is a need to have a substantial changes to organizational business processes.

This study is tried to examine the relationship between facilitating condition and intention to use technology, despite the argument where it is not significant with the existence of performance and effort expectancies. This is because it is believed, if there is intention to use the tax e-filing technology, the facilities and technical support also have been provided.

3.3 Hypotheses Development

As for this study, the UTAUT model is modified and change in order to suit the situation of tax e-filing in Malaysia. Thus, most of the determinants are tested with the consideration of additional factors. New moderators on the other hand, are examined as those moderators are expected to give better explanation for this study.

3.3.1 Performance expectancy and intention to use technology

Performance expectancy as reported by Venkatesh et al. (2003) is the degree to which an individual believes that using the system could help individual increase in job performance. Studies revealed that performance expectancy is the strongest predictor in the UTAUT model with an R^2 ranging from .46 to .59, $p<0.001$. This variable is the most consistent predictors of behavioral intention where the more individuals expect the technology could improve performance, the more likely the technology introduced is adopted (Venkatesh et al., 2003). Hence, the same pattern and effect of performance expectancy could be expected in the intention to use tax e-filing technology. The

adoption of tax e-filing system in corporate taxation could increase the performance of tax agents/preparers in effectively and efficiently completed and returned the return form electronically. Thus, it is predict that there is a positive relationship between performance expectancy and behavioral intention to accept tax e-filing in Malaysia among tax agents/preparers.

H_1: Performance expectancy has a positive influence on behavioral intention to accept e-filing in Malaysia.

3.3.2 Effort expectancy and intention to use technology

Effort expectancy is the degree of ease associated with the use of the system (Venkatesh et al., 2003). Studies that tested and incorporated the 32 variables into four (4) main variables pointed out that effort expectancy is the weak determinant in the UTAUT model with an R^2 ranging from .08 to .2, $p<0.05$. This is because individual expect the technology introduced should be free of effort. Therefore, when technology is perceived to require more effort to use, then the tendency to intend to use the technology is decreased and vice versa. It is basically due to the perception that more effort it takes to use shows the less useful the technology (Davis et al., 1989; Venkatesh, 2000; Venkatesh & Davis, 2000). Such same effect is predicted to be on the e-filing technology where free of effort could improve as well as attract the tax agents/preparers to adopt the system. Hence, it is proposed that effort expectancy could have result in a positive relationship with behavioral intention in accepting e-filing among tax agents/preparers in Malaysia.

H_2: Effort expectancy has a positive influence on behavioral intention to accept e-filing in Malaysia.

3.3.3 Social influence and intention to use technology

According to Venkatesh et al. (2003), social influence is the degree to which an individual perceived that important others believe that individual should use the new system. The scholars found that social influence depict low positive relationship in the UTAUT model. This is because in a voluntary condition, social influence constructs are not significant. Under a mandatory condition, this element of social influence is seemed to be significant only on early stage and turn out to be non-significant as experience increased. Meaning that as individual become familiar with the technology, influences from others have no effect on behavior intention. However, in tax e-filing acceptance among tax agents/preparers, there could be or is expected to have relationship between social influence and behavioral intention. In Malaysia, tax e-filing is on a voluntary basis, the social influence could indirectly influence the intention to use. This is because other form of moderators is being used in determining the direct relationship of social influence and behavioral intention. Thus, the social influence is predicted to have a significant effect on the behavioral intention. Therefore, it is envisaged that there is a positive relationship between social influence and behavioral intention to accept tax e-filing in Malaysia among tax agents/preparers.

H_3: Social influence has a positive influence on behavioral intention to accept e-filing in Malaysia.

3.3.4 Facilitating conditions and intention to use technology

Facilitating conditions are the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system. The result shared in the study of the UTAUT model (Venkatesh et al., 2003) is that facilitating conditions is a significant predictor of usage behavior with R^2 ranging from 0.05 to 0.18, $p<0.05$. In this study, on tax e-filing acceptance among tax agents/preparers in Malaysia the focus is on the intention and not actual use. Even in this case and based on the fact that facilitating conditions significantly affect the usage, yet the determinant is remained in this study. This is because it is believe that if there is an intention to use any new technology or product, certainly there would be facilities and technical support provided by the organization to the users or adopters (Lu et al., 2009). In addition, there is also a need to study on the importance of compatibility factor of the new technology to influence the new adopters. Based on the fact, it is projected that facilitating conditions result in a positive relationship on behavioral intention in accepting tax e-filing among tax agents/preparers in Malaysia.

H_4: Facilitating conditions has a positive influence on behavioral intention to accept e-filing in Malaysia.

3.3.5 Perceived value and intention to use technology

Perceive value is enhanced by either adding benefits to the service or by reducing the outlays, *i.e.* time, physical and psychic effort associated with the purchase and use of the service. Thus, adding value at competitive price give a competitive advantage to the service. Therefore, the more customers perceived on the benefits received from the service, the higher the perceived value. Hence, the more sacrifices, *i.e.* costs need to be given in acquiring the service, the lower the perceived value perceived by customers. In addition, customers also perceive higher value in the service if they perceive the quality offered by the service is greatly and exceeding the costs needed to sacrifice in obtaining the service. Indirectly this could result in a great satisfaction and increase loyalty to the service. In fact, perceived value is found to be one (1) of the primary factor influencing purchase intentions. Hence, the same expectation is on the tax e-filing system behavioral intention to use that could have result in a positive relationship on perceived value.

H_5: Perceived value has a positive influence on behavioral intention to accept e-filing in Malaysia.

3.3.6 Volume of transaction

Volume of transaction is specifically referring to number of clients or return forms dealing by tax agents/preparers. This variable does play role even though there is less empirical evidence on this matter. This is because big companies as well as courts that overload with work and cases preferred to change to e-filing system in order to overcome

their inefficiency problem (Anderson et al., 2005; Anonymous, 2005; Krause, 2003). Thus, there is a possibility of having a significant effect between volume of transaction and acceptance of tax e-filing. However, there is no evidence or study conducted on this matter to prove the relationship towards a behavioral intention to accept a new technology. Reports from the United States indirectly pictured that accepting e-filing behavior is due to the ability of the system to improve performance and less effort required with facilities availability do relevance to the acceptance. Hence, the same effect is predicted in tax e-filing scenario in Malaysia where workload or increasing in volume of transaction could possibly affect the work performance. Then, the intention to use the tax e-filing is directed. Moreover, the effectiveness and efficiency of tax e-filing and be able to improve performance with less effort required is not influenced the intention to adopt tax e-filing system without any pressure from the volume of transaction. This condition is also predicted even when facilities available to ease the tax agents/preparers, tax e-filing is not the alternative until volume of transaction really affected the work performance. Thus, the following hypotheses are derived:

H_{1a}: *The influence of performance expectancy on behavioral intention toward e-filing among tax agents/preparers will be moderated by volume of transaction.*

H_{2a}: *The influence of effort expectancy on behavioral intention toward e-filing among tax agents/preparers will be moderated by volume of transaction.*

H_{4a}: The influence of facilitating conditions on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by volume of transaction.

3.3.7 Design characteristics

Design characteristics are among the considered elements in any designs as it could ease the use of any system or technology introduced. Research in technology development and adoption mostly stressed on the important to provide a user-friendly interface; designing a suitable information system flow; and focus on developing effective user guidance (Hung et al., 2006; Lai et al., 2004). A suitable design characteristics associated to the technology introduced could reduce the effort to integrate the technology into a particular task. Thus, if a system could provide users with relevant information on time, accurate, understandable and help in a better decision making (Speier et al., 2003), obviously users perceived the system as greater job relevance, high output quality and greater result demonstrability. As a matter of fact, the design of the tasks and context of the technology influenced the performance and effort expectancy which in turn influenced the adoption and use of the system (Brown et al., 2010). In addition, users alternatively choose the system if the value offered benefited them (Anckar & D'Incau, 2002; Anderson & Srinivasan, 2003; Anonymous, 2005). The perceived value of the technology is higher if the design required less sacrifices in terms of time taken to understand and operationalized the system. Yet, the quality of the system is not ignored in ensuring the

tasks are performed easily and smoothly. Hence, it is predicted that if tax agents/preparers perceived the importance of design characteristics on performance and effort expectancies as well as perceived value, then behavioral intention toward accepting tax e-filing could be affected.

H_{1b}: The influence of performance expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by design characteristics.

H_{2b}: The influence of effort expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by design characteristics.

H_{5b}: The influence of perceived value on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by design characteristics.

3.3.8 User participation

Users participation is significantly influenced the intention to accept or adopt the system or services initiated and implemented. Even though the feedback is in a positive or negative view, but in a way could provide a useful and informative basis in performance of system development. The user participation is highly important in a complex technology system as the presence of this group enable to form judgments about job relevance, output quality and result demonstrability that is suited with task requirements. Participation and involvement of users in system development is also formed opinions regarding the social pressure which could influence others to accept or refuse the

technology introduce (Mathieson, 1991). This is important element as the system and content could be differently viewed by different individuals. Likewise, physical participation on system designing is reduced anxiety related to the system which potentially enhance favorable perceptions of external control, perceived enjoyment and objective usability (Venkatesh & Bala, 2008). This is due to users having a better understanding of the system features, organizational resources and support pertinent to the system. Hence, user participation in this study referring to tax agents/preparers could improve the relationship of performance expectancy and social influence towards the behavioral intention to use tax e-filing in Malaysia.

H_{1c}: The influence of performance expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by user participation.

H_{3c}: The influence of social influence on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by user participation.

3.3.9 Incentive alignment

The aspect of incentive alignment is also important to be considered in influencing behavioral intention (Ba et al., 2001). This is because if users find that the system features and capabilities of the system is not aligned to their interest and incentives, the acceptance among them could be failed. Indirectly, the technology itself without any incentive aligned to the acceptance is leaded to a negative attitude toward the technology

introduced. Incentive alignment is in the forms of organizational rewards for using a system; individual's perception on job-fit; and perceived value of technology adopted (Ba et al., 2001). The individual's perception of lack of incentive alignment and result in low acceptance on the technology is also due to the perceived benefits of the technology to other work units instead. In a way, incentive alignment that is an important extrinsic reward could influence subjective norm, image, reduce anxiety as well as increase perceived enjoyment. This important extrinsic reward is considered important drivers of intrinsic motivations (Deci et al., 1999; Ryan & Deci, 2000). It is likely that, without any incentives alignment to the intention behavior, even though tax e-filing seems to help in job performance; reduce effort in completing return forms; the benefits; and opinions by others on the usefulness of the system, tax agents/preparers would reluctant to accept the tax e-filing system. Thus, performance expectancy, effort expectancy, social influence and perceived value are predicted could influence behavioral intention with the availability of incentive alignment to the tax e-filing system offered to tax agents/preparers.

H_{1d}: *The influence of performance expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by incentive alignment.*

H_{2d}: *The influence of effort expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by incentive alignment.*

H_{3d}: *The influence of social influence on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by incentive alignment.*

H_{5d}: The influence of perceived value on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by incentive alignment.

3.3.10 Training

Scholars have empirically proved the significant relationship of training is effectively increased employees' knowledge and also impacting on practice (Allen et al., 1997; Berryman et al., 1994; Dench, 2005; Oorsouw et al., 2010). Findings also indicated that training could help users to develop favorable perceptions on perceived usefulness and perceived ease of use. This is because with the training, less effort is required in learning and understands the technology accepted. Training is important element in introducing a new technology that reduces rejection due to the complexity nature of the technology. However, an effective training is alleviated the negative reaction and increased in intention to accept the technology. Thus, an attractive mode of training either traditional- or game-base as well as other forms of training could improve the acceptance rate. The crucial part of training is also predicted to have influence the relationship of performance and effort expectancies toward intention to accept tax e-filing among tax agents/preparers in Malaysia.

H_{1e}: The influence of performance expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by training.

H_{2e}: The influence of effort expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by training.

3.3.11 Organizational and peer supports

Organizational and peer supports are two (2) important elements in influencing the behavioral intention to accept any technology initiated. In fact, prior research is also agreed that employee' perceptions regarding organizational support that is facilitating conditions or perceptions of external control (Taylor & Todd, 1995b; Venkatesh, 2000; Venkatesh et al., 2003) and perceive value (Swait & Sweeney, 2000) could lead to greater user acceptance of new system. In addition, this element is considered a key role in determining perceived usefulness, perceived ease of use and perceived value. In the case of tax e-filing in Malaysia, experts provided by organizational could assist tax agents/preparers in simplifying certain aspects of the new system, thus increased job relevance, output quality and result demonstrability of the system. Peer support on the other hand, could influence subjective norm and image associated with accepting the tax e-filing system if coworkers are favorable toward the system via social influence processes (Venkatesh & Davis, 2000). In fact, if the tax agents/preparers receive support in the aspects of the technology to use and guidance on how to use, the tasks could be completed in less time, effective and are more satisfied (Brown et al., 2010). Hence, the value or benefit of e-filing with facilities available and supported by organization could increase the intention to accept the tax e-filing. Therefore, the following hypotheses are predicted related to tax e-filing acceptance among tax agents/preparers in Malaysia.

H_{1f}: *The influence of performance expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by organizational and peer supports.*

H_{2f}: *The influence of effort expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by organizational and peer supports.*

H_{3f}: *The influence of social influence on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by organizational and peer supports.*

H_{4f}: *The influence of facilitating conditions on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by organizational and peer supports.*

H_{5f}: *The influence of perceived value on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by organizational and peer supports.*

3.4 Research Design

This study is focus on the determinants of tax e-filing acceptance among tax agents/preparers in Malaysia in a form of quantitative study. The unit of analysis is tax agents/preparers in Malaysia who is selected via simple random sampling. Tax clients/corporate taxpayers are not taken as unit of analysis because this group of

full freedom to the tax agents/preparers in making the choice on medium of transaction and submission. On top of that, almost 99 per cent of the corporate taxpayers/clients seeking for the assistance of tax agents/preparers in filing and submission of the tax return form. A questionnaire that is designed using 7-point Likert scale is sent to subject via mail together with token of appreciation. In addition to that, an interview among tax agents/preparers in Kedah and Selangor state is conducted to get a more comprehensive and conclusive answers during the Delphi technique session. The questions covered the independents variables, *i.e.* performance expectancy, effort expectancy, social influence, facilitating conditions and perceived value that determined the behavioral intention to accept e-filing. Moreover, the moderating factors, *i.e.* volume of transaction, design characteristics, incentive alignment, user participation, training as well as organization and peer supports is also studied in order to understand the effect of these factors on strengthening the relationship of variables in e-filing technology acceptance in Malaysia among tax agents/preparers. The details of study conducted are explained in the following sections.

3.5 Operational Definition

Related to this study, there are several variables need to be understood. This is to ease in having more comprehensive information on the determinants that could affect the acceptance of e-filing among tax agents/preparers in Malaysia.

3.5.1 Tax agents/preparers

A person who is involves in the process of preparing income tax returns for a person known as tax payer. Tax agents/preparers is required to be licensed by the Ministry of Finance based on tax licensing guidelines that have been issued. The validity period of any approval or renewal of the tax license of a tax agent is 36 months.

3.5.2 Tax payers/clients

An individual or corporate taxpayer who is obligates to pay tax on the chargeable income. This is according to the Income Tax Act 1967, where income is chargeable upon income that is accruing in or derived from Malaysia or received by a resident person in Malaysia from outside Malaysia. The corporate tax payer is considered clients to the tax agents/preparers if seek assistance for preparing the income tax return.

3.5.3 Behavioral intention

Behavioral intention in this study is acting as dependent variable. It is referring to the tax agents/preparers' intention to accept or reject the tax e-filing system. This is only focus on the task related to corporate tax return form.

3.5.4 Performance expectancy

In this study, performance expectancy is referred to as independent variable. Operationally, performance expectancy is defined as believes that tax agents/preparers have on tax e-filing technology could ease in their tasks as well as enhance in job performance.

3.5.5 Effort expectancy

As an independent variable in this study, effort expectancy is associated with the effort put forward in order to accept the system introduced. This is related to whether prior preparations are needed in ensuring the tax e-filing system could be used after being adopted.

3.5.6 Social influence

Social influence in this study is referred as independent variable. The element of social influence is studied from the angle of tax agents/preparers' perception. This is an external influence that tax agents/preparers' perceived as important to consider others believe on the need to adopt the tax e-filing system.

3.5.7 Facilitating conditions

Facilitating conditions is referred to the organizational and technical infrastructure supports. This is an independent variable in this study which examined how important is facilitating conditions provided to support the tax e-filing system to persuade the intention of tax agents/preparers to adopt the system soon or later.

3.5.8 Perceived value

Perceived value is another independent variable in this study. This factor is operationally defined as the tax agents/preparers' overall assessment of the utility of the tax e-filing system based on perceptions of what is received and what is given. The perceptions simply means how useful the tax e-filing system to tax agents/preparers in helping their task if compared to the value that need to forego, *i.e.* time spent on the system and money spent on getting the system prepared to use.

3.5.9 Volume of transactions

Volume of transaction is referred to the number of clients or return forms required to be completed within the assessment period by tax agents/preparers.

3.5.10 Design characteristics

Design characteristic is related to the features of the tax e-filing system that could attract users to accept or adopt the system. This includes the technical aspects as well as interfaces designs.

3.5.11 User participation

User participation is referred to the assignments, activities and behaviors that users (tax agents/preparers) of their representatives perform during the systems' implementation process.

3.5.12 Incentive alignment

Incentive alignment does not mean organizational rewards for using a system only. It is also considered tax agents/preparers' perception on job-fit and perceived value of tax e-filing technology adopted.

3.5.13 Training

A formal or an informal activity prepared on tax agents/preparers to equip them with related skills and knowledge.

3.5.14 Organization and peer supports

Organizational support is a form of formal or informal activities or functions to assist tax agents/preparers in using the new system effectively. While peer support is referred to different activities or functions performed by coworkers that could help tax agents/preparers effectively use the new system. The support from organization is in various forms such as providing necessary infrastructure, creating dedicated helpdesks, hiring system and business process experts and sending employees to off-the-job training.

3.6 Measurement of Variables/Instrumentation

The instrument developed in this study is based on the purpose of the study. Thus, a statement explaining the purpose, a statement of confidentiality and an approximation of the time needed to complete the instruments are included in the cover letter of the questionnaire. A Likert scales with anchors ranging from "1 = strongly disagree" to "7 = strongly agree" are used for all questions except on the demographic part. The research questionnaire is constructed into four (4) sections that measured behavioral intention. The behavioral intentions are measured using Venkatesh et al.'s (2003) Behavioral Intention Scale included in the UTAUT measure. The scale is scored on a 7-point Likert scale ("1 = strongly disagree" to "7 = strongly agree") and measured the intentions tax agents/preparers' hold about accepting the e-filing technology. Sample items include "assuming I had access to the e-filing system, I intend to use it" and "I plan to use the e-filing system in the next years". In all, there are five (5) items in this construct. Result

with highest score, *i.e.* 35 points (5 items x 7 points) portrays a very positive behavioral intention toward accepting tax e-filing among tax agents/preparers. Whilst the lowest score, *i.e.* five (5) points (5 items x 1 point) depict the very negative intention toward the acceptance.

The performance expectancy, effort expectancy, social influence, facilitating conditions and behavioral intention scales are the constructs which are adapted from Venkatesh et al. (2003). The performance expectancy is measured using Performance Expectancy Scale included in the UTAUT measure. The scale is based on 7-point Likert scale ("1 = strongly disagree" to "7 = strongly agree") and measures the tax agents/preparers' perception of whether the tax e-filing technology improved their job performance. In all, there are 17 items in this construct. There are 16 items with positive statement and one (1) item with negative statement. The negative statement score is reversed from the original scale into "1= strongly agree" to "7= strongly disagree". Result with the highest score, *i.e.* 119 points (17 items x 7 points) point out a very positive performance expectancy toward accepting tax e-filing among tax agents/preparers. Whilst the lowest score, *i.e.* 17 points (17 items x 1 point) show the very negative performance expectancy toward the acceptance. Meaning that the tax e-filing is not helping in ease the tasks of completing return form for corporate taxpayers. Sample of positive items include "if I use the e-filing system, it would improve my job performance" and "If I use the e-filing system, I will increase my chances of getting a raise". The sample of negative item is "if I use the e-filing system, it will have no effect on the performance of my job.

The effort expectancy is measured using Venkatesh et al.'s (2003) Effort Expectancy Scale included in the UTAUT measure. The effort expectancy is based on 7-point Likert scale ("1 = strongly disagree" to "7 = strongly agree") which measures the amount of effort of tax agents/preparers anticipate in accepting the tax e-filing technology and vice versa for the negative statement items. Sample of positive statement items include "learning to operate the e-filing system would be easy for me" and "overall, I believe that the e-filing system is easy to use". Whilst the sample of negative statement includes "using the e-filing system would takes too much time from my normal duties" and "it takes too long to learn how to use the e-filing system to make it worth the effort". In total, there are 12 items in this construct with eight (8) of positive statement and four (4) of negative statement. Result with the highest score, *i.e.* 84 points (12 items x 7 points) point out a very positive effort expectancy toward accepting e-filing among tax agents/preparers. Whilst the lowest score, *i.e.* 12 points (12 items x 1 point) show the very negative effort expectancy toward the acceptance.

The Social Influence Scale from the UTAUT measure is applicable for the social influence construct. The scale is scored on 7-point Likert scale ("1 = strongly disagree" to "7 = strongly agree") and measured the amount of influence a tax agents/preparers perceives important others within the organization have on them using the tax e-filing system. In total, there are nine (9) items in this construct. Result with the highest score, *i.e.* 63 points (9 items x 7 points) point out a very positive social influence toward accepting tax e-filing among tax agents/preparers. Whilst the lowest score, *i.e.* nine (9)

points (9 items x 1 point) show the very negative social influence toward the acceptance. The sample items include "people who influence my behavior think that I should use the e-filing system" and "having the e-filing system is a symbol of status in my organization".

The facilitating conditions also based on Venkatesh et al.'s (2003) Facilitating Conditions Scale included in the UTAUT measure. The scale is scored on a 7-point Likert scale ("1 = strongly disagree" to "7 = strongly agree") and measures the tax agents/preparers' perception of how supportive the organization is with the tax e-filing technology. Sample items include "I have control over using the e-filing system" and "using the e-filing system fits into my work style". Overall, there are 12 items in this construct. Result with the highest score, *i.e.* 84 points (12 items x 7 points) point out very positive facilitating conditions toward accepting tax e-filing among tax agents/preparers. Whilst the lowest score, *i.e.* 12 points (12 items x 1 point) show the very negative facilitating conditions toward the acceptance. In total of the 12 items in this construct, 11 items of positive statement and one (1) of negative statement. The negative item is "I would have trouble of using e-filing with other application".

The perceived value items are adapted from Netemeyer et al. (2004) and Jackie (2004). The 7-point Likert scale ("1 = strongly disagree" to "7 = strongly agree") measure the tax agents/preparers' perception on value associated with the tax e-filing technology. Overall, there are eight (8) items in this construct with seven (7) of positive statement and one (1)

of negative statement. Result with the highest score, *i.e.* 56 points (8 items x 7 points) point out a very positive perceived value toward accepting tax e-filing among tax agents/preparers. Whilst the lowest score, *i.e.* eight (8) points (8 items x 1 point) show the very negative perceived value toward the acceptance. The samples of positive items include "the benefit from the e-filing system would be worth the cost" and "the overall quality of the e-filing system would be the best". Whilst the sample of negative statement includes "the time considered, the e-filing system would not be a good decision".

The moderating variables, *i.e.* design characteristics, user participation, incentive alignment, training as well as organization and peer supports scales are adapted from Venkatesh and Bala (2008) and Hong et al. (2002). These moderating variables are in a form of the 7-point Likert scale ("1 = strongly disagree" to "7 = strongly agree"). Whilst the design of one (1) moderating variable is in a form of non metric, *i.e.* volume of transaction is determined accordingly to the literature review.

The demographic part, *i.e.* age, race, office location, gender, qualification, experience in tax e-filing (corporate taxation) and number of client are measured with single item measures. The items give information on tax agents/preparers' age, race, office location, gender, qualification, years of experience in tax e-filing (Form C) and number of client.

3.7 Data Collection

This research is conducted in a mix method that is survey method as well as interview. The survey type of data collection is relevant as the respondents or unit of analysis is scattered all around Malaysia (Kanuk & Berenson, 1975). This method could provide information about a population in a quick, inexpensive, efficient and accurate manner (Kanuk & Berenson, 1975; Zikmund, Babin, Carr, & Griffin, 2010). In fact, it is quite flexible and popular technique which has undertaken in the last few decades as the standards have become quite scientific and accurate (Kanuk & Berenson, 1975; Zikmund et al., 2010).

Interviews are conducted in order to get extra information on the nonverbal part such as voice intonation, gestures and facial expressions. This kind of data collection give more meaning to the questions as the answers given is conveying with the psychological impression during the Delphi technique session. In fact, as in a study by Short, William and Christie (1976) as cited in Brown et al. (2010), the best communication is via face-to-face, followed by technology, *i.e.* using audio and video communication and the least via text communication.

3.7.1 Questionnaires

The questionnaire is a combination of structured and unstructured questions according to the section. The questionnaire is prepared in the English version. It is divided into several

sections (referred to as Section A, B, C and D). Section A is a list of questions to know the intention and attitude of tax agents/preparers in accepting tax e-filing if given a chance or access. The following section is divided into parts. Those parts, *i.e.* Part I, Part II, Part III, Part IV and Part V are related to the determinants of tax e-filing. The questions listed give an idea on performance expectancy, effort expectancy, social influence, facilitating conditions as well as perceived value of tax e-filing among tax agents/preparers. Section C is a group of questions to test on the moderators. The purpose is to study on the effect of those moderators on the determinants of tax e-filing whether there are any significant, non-significant or no effect at all on the behavioral intention to accept tax e-filing. The last section is related to the demographic information of the respondents, such as age, race, education background, years of experience, number of clients and location of tax agents/preparers' office.

3.7.2 Sampling

Tax agents/preparers in Malaysia are identified as the sample or unit of analysis in this research and the potential respondents to the questionnaire. The reason of choosing tax professional which also known as tax agents/preparers is due to their knowledge level (Lapointe & Rivard, 2005). This is evidenced from previous studies that acknowledge tax agents/preparers as an important third party in tax compliance settings who are equipped with technical knowledge as well as acquired with professional experience which enable them to communicate well with ordinary taxpayer (Burnett, 1998; Lai et al., 2004;

Newsberry, Reckers, & Wyndelts, 1993). Rogers (1995) also emphasizes on this matter and recognized that individual with high level or better education level is tend to aggressively seek for new ideas. This group of individual is able to use their advanced and rigorous knowledge as well as experience to accept any new innovation and willing to venture into new things (Agarwal & Prasad, 1998; Rogers, 1995). Hence, tax agents/preparers are able to exercise a strong recommendation and directly influence taxpayers to comply with regulation imposed (Erard, 1993).

On top of that, in Malaysia the IRB depending on local tax agents/preparers to promote the tax e-filing system (Lai et al., 2004). In fact almost 99 per cent of companies in Malaysia counting on local tax agents/preparers to prepared and filed their income tax returns (John, 2010). Indeed, the effectiveness of tax e-filing system implementation and acceptation among taxpayers could only work with the assistance and cooperation of tax agents/preparers (Hansford et al., 2006; Lai et al., 2004). As a matter of fact, Hu, Chau, Sheng and Tam (1999) also pointed out that professionals are deviously differ from individuals in an ordinary business setting in terms of accepting technology.

This highlights the importance of focusing on tax agents/preparers instead of taxpayers with corporate income. In fact, due to the largest group of respondents depending on tax agents/preparers, IRB in Malaysia introduced the tax e-filing system that is accessed directly by tax agents/preparers in year 2008. This means, tax agents/preparers could managed their clients' taxation files and returned the return form more convenience and

easily. In addition to that, the corporate taxpayers/clients themselves give a full freedom to the tax agents/preparers in the arrangement of the return form in terms of filing, transaction and submission. Thus, it is the tax agents/preparers discretionary to choose the manual or electronic tax filing in the submission of return form to the authority bodies.

3.7.3 Sample size

In Malaysia, there are 1,871 tax agents/preparers officially register with IRB in year 2010. Those tax agents/preparers are licensed by the Ministry of Finance based on tax licensing guidelines. The approval or renewal of the tax license is valid for 36 months. These tax agents/preparers scattered as follows (Table 3.1):

Table 3.1
Location, population and sample of tax agents/preparers in Malaysia

Location	Population (N)	Sample (n)
Perlis	3	2
Kedah	45	37
Pulau Pinang	146	60
Perak	113	43
Selangor	339	157
Kuala Lumpur	603	201
Negeri Sembilan	27	11
Melaka	70	39
Johor	199	76
Pahang	34	14
Terengganu	24	20
Kelantan	32	18
Sabah	100	23
Labuan	4	1
Sarawak	132	12
Total	**1,871**	**714**

Source: IRB Website (2010)

However, the sample size is limited to 714 with an addition of 70 per cent from the recommended size as according to the table suggested by Krejcie and Morgan (1970). The additional number of population is to cover the non response rate as experience in many studies in Asia. The planned sample size is taken with the consideration of possibility of failure in returning the questionnaire. In addition, the size also followed the proposed sample size by Roscoe (1975) as cited in Sekaran (2000a) which is larger than 30 and less than 500. This is suitable and appropriate for most research. As for the structural equation modeling (SEM) method, this sample size also according to the recommended size which is 100 or larger (Hair, Black, Babin, & Anderson, 2010).

3.7.4 Sampling/Data collection procedures

Simple random sampling (Sekaran, 2000b) is used on the 1,871 respondents located in Semenanjung Malaysia, including Sabah and Sarawak. This procedure has the least bias effect and also offers the most generalizability. This type of sampling procedure could ensure every tax agents/preparers in Malaysia who are registered with IRB have an equal probability to be chosen as subjects in the sample.

The method to choose respondent via the simple random sampling is conducted via SPSS software version 18.0 for Windows. A list of tax agents/preparers is obtained from the website as updated in year 2010. In total there are 1,716 registered tax agents/preparers remained in the list excluding five (5) selected respondents for Delphi technique and 150

respondents for pilot test purposes. Accordingly to the license expiry date, all the tax agents/preparers are rearranged and pasted into the SPSS program. Then, the instruction to select 714 respondents based on random sampling method is successfully produced the list.

Tax agents/preparers in each state have an equal probability to be selected as respondent. The respondent is approached via a mail questionnaire even though there are disadvantages in this kind of approach. This is because mail questionnaire could:

i- reached wide geographic regions;

ii- token of appreciation could be enclosed to seek compliance; and

iii- respondents could take more time to respond at their convenience time;

The disadvantages of mail questionnaire also could not be ignored. Due to that several possible remedies is taken into consideration by:

i- Increase the number of respondents. As for this research the sample size is 70 per cent extra from the recommended amount to overcome the probability of having low return in completed questionnaire.

ii- Pilot study is conducted before the questionnaire is distributed. This pilot study is carried out with the purpose to clarify and rectify the questions if needed as mail questionnaire depends on the respondents' understanding. Hence, the questions should as much as possible simple and easy to be understand.

iii- Follow up procedures for late responses. This is to ensure the adequate amount of response rate is gathered to be able analysis be conducted and the information could be efficiently and correctly be generalized.

iv- Cover letter is provided. This cover letter is prepared with the questionnaire to inform respondents on the confidentiality as well as to request the respondents to provide information freely without bias, not influences by any parties and not copying.

The questionnaires posted are according to the selected respondents' address obtained from the IRB website, *i.e.* registered tax agents/preparers. Each of the envelopes contains a booklet of questionnaire, one (1) pen as token of appreciation as well as stamped return envelope. Respondents are requested to return the questionnaire within two (2) weeks times. A reminder letter is posted to all the selected respondents when the questionnaire failed to be returned on time. The reminder letter gently requests the respondents to return the questionnaire and ignore the letter if not applicable. The data collection work is stopped once the samples achieved the sufficient amount.

3.8 Techniques of Data Analysis

Various techniques in several stages are applied in this study. The first stage involves of data screening and testing the assumptions of multivariate analysis. This technique is necessary in ensuring that the data are correctly entered and having normal distributions

of variables (Coakes, 2005a). It is important to accomplish the basic characteristic or assumptions of the underlying data and relationships for multivariate analysis. Basically, the purpose is to derived at one (1) model that is fit to execute the statistical analysis (Hair et al., 2010). Then, the factor analysis exploring is required to summarize the essential information contained in the variables. This technique mainly to ensure the items are tapping into the same construct (Coakes, 2005c). The next stage of data analysis is conducted using structural equation modeling (SEM). This technique is a comprehensive approach in testing the relationship between observed and latent variables (Byrne, 2010b; Hair et al., 2010; Hoyle, 1995). In fact, Hair et al., (2010) and Byrne (2010b) also stressed on the usefulness of SEM which could (i) provide a straight forward method for dealing with multiple relationship simultaneously, while also providing statistical efficiency; and (ii) assess relationships comprehensively, while providing a transition for exploratory to confirmatory analysis. This particular technique is suitable to test a series of relationship for instance on the confounding effect of age by gender, age by experience, gender by experience and income by location (Lu et al., 2009; Yaghoubi, Kord, & Shakeri, 2010). The details discussion is as in the following section.

3.8.1 Data screening process and testing the assumption of multivariate analysis

Data screening process is the first stage in the analysis stage. The aims are to have free of error data and normal distribution of variables. This is essential to avoid from affecting the validity of the results that is produced. The technique of data screening is divided into

two (2) stages, *i.e.* data screening; and testing the assumption of multivariate analysis (Hair et al., 2010). Several tests available for the purpose of data screening, *i.e.* response bias test; missing data test; and outliers test. These test is to ensure the data available for further analysis is clean and within the expected range as well as fit for multivariate analysis (Byrne, 2010b; Hair et al., 2010). The fundamental set of underlying assumptions for multivariate analysis is tested in several forms, *i.e.* normality, linearity, homoscedasticity and absence of correlated errors. It is essential to meet these underlying assumptions as it is a foundation for all multivariate statistical techniques. The violation of the assumptions is causing implications in estimation process or in interpretation of the results (Byrne, 2010b; Hair et al., 2010).

The response bias testing is conducted in order to observe whether there is any significance difference in data collection. The main purpose is to test the validity of the items tested in each constructs. Respondents are divided into two (2) groups, *i.e.* early and late respondents and coded as one (1) and two (2) respectively. The early reply means the feedback received as the questionnaire posted to respective recipients. The late reply are those who give respond after several times of reminders. However, the division into mentioned two (2) groups is able and depends on the number of respondents in each category. Alternatively, the total respondents are divided into two (2) groups' randomly selected using SPSS software. This is necessary if the number of respondents in each category as mentioned above is small or not balances. These two (2) groups of respondent then being analyze using t-test. The outcome would determine the level of

significant, *i.e.* $p<0.05$ whether the feedback with bias or otherwise. If the p value more than 0.05, the feedback between the two groups is considered no bias and is biased if the significant level is less than 0.05.

The issue of missing data that could affect the generalizability of the results (Hair et al., 2010) is undertaken via few steps. It is essential as any missing data have significant impact on the analysis especially for the multivariate analysis. Hence, any missing data need to be understood and also to be applied any remedies if possible. The few steps as highlighted by Hair et al. (2010) include: (1) determine the type of missing data; (2) determine the extent of missing data; (3) diagnose the randomness of the missing data processes; and (4) select the imputation method. The first step of identifying the type of missing data is with the concern whether to ignore or not the missing data. Thus, the missing data is ignored if the data left with no answer due to the question is not applied to a specific design, population or categorized as censored data. However, the missing data is needed for remedies if it is not ignorable, *i.e.* missing due to procedural factors or sensitive questions. The extent of missing data to be ignored should be less than 10 per cent for an individual case and, however, depend on the number of cases. If the number of cases is not sufficient, the case is remained with remedies need to be taken into consideration. However, if the missing data is less than 15 per cent, the variable is deleted and remedied if the missing data is between 20 to 30 per cent. The next step is the diagnosis stage which the missing data is categorized as missing at random or missing completely at random. Then, only the imputation process has taken place where the

missing value is estimated. This is mainly to identify the relationship of the valid values of the sample with the missing value.

Outliers test is necessary in data screening to identify the distinctly different of sample from its population. The differences are detected in the form of univariate (*i.e.* differences on a single variable); bivariate (*i.e.* differences between two variables); or multivariate (*i.e.* differences across on an entire set of variables). Univariate outliers is identified based on Z-scores which value greater or less than three (3) (Coakes, 2005b). Bivariate outliers is the one (1) at isolated points in the scatterplot (Hair et al., 2010). The multivariate outliers on the other hand is measured based on the Mahalanobis D^2 (Hair et al., 2010). The D^2 value is divided by degree of freedom (*DF*), if exceeding 2.5 for small samples and three (3) or four (4) for large samples is considered outliers. The level of significance indeed should be conservative (*i.e.*, 0.005 or 0.001). The decision to retain or delete the outliers detected is depends on the characteristics of the outliers as well as the objectives of the analysis.

The complexity of the relationships among the large number of variables, analyses and results increased the need to test the statistical assumptions. The first assumption of multivariate analysis is normality that is referred to the shape of the data distribution. The shape is measured via kurtosis and skewness of the data distribution. The kurtosis is based on the height of the distribution either peak or flat. The skewness on the other hand is described based on the balance of the distribution either zero (0) value or above (*i.e.*

positive skewness and shift to the left) or below (*i.e.* negative skewness and shift to the right) zero (0) value. However, the sample size plays an important role. The normality is affected most on the small sample size (*i.e.* 50 or less) and the effect is reduced as the sample size reach 200 or more (Hair et al., 2010). Statistically, the normality is judged via $z_{skewness}$ where if the value exceed $\pm$ 2.58 (*i.e.*, 0.01 significance level) and $\pm$ 1.96 (*i.e.*, 0.05 significance level), then the data distribution is considered non normal (Hair et al., 2010).

The second assumption is related to the homoscedasticity which concerns on the dispersion of the dependent variable. The dispersion should be equal to each value of independent variable or otherwise the relationship is categorized as heteroscedastic. Hence, the test of homoscedasticity is performed via graphically, *i.e.* scatterplots or boxplots. In boxplots, the variation is determined by the length of the box and the whiskers. Statistically, the Levene test is the suitable tool. This test is used to assess whether the variances of a single metric variable are equal across any number of groups. The probability of relationships between independent variables should be non-significant ($p > 0.001$) and the alpha level of 0.001 is recommended (Coakes, 2005e; Coakes & Ong, 2011; Hair et al., 2010). The linearity assumption is detected via scatterplots of the variables with a straight line. The linearity exhibit by the straight line representing the linear relationship associated between independent and dependent variables due to some changes. The last assumption of multivariate analysis is the multicollinearity. The assumption concerns on the errors predicted is that there should not be any correlation to

each other. The absence of correlated errors could have leads to biased results due to failure to specify the cause. Statistically, multicollinearity is tested via correlation matrix, assessment in a tolerance value and variance inflation factor (VIF). The correlation matrix for the independent variables is indicating a high correlation, *i.e.* 0.90 and higher than a substantial collinearity. The tolerance values determined via a formula of 1- R^{2*} give an idea of the amount of variability of the selected independent variable that is not explained by the other independent variables. Hence, the value of tolerance should be high which indicates a small degree of multicollinearity (Hair et al., 2010). VIF is the inverse of the tolerance value, *i.e.* 1/ (1-R^{2*}). Thus, the lower the tolerance value indicates a high degree of multicollinearity that is reflected by high VIF value. A common accepted levels of multicollinearity is a tolerance value of 0.10, corresponding to a VIF of 10 and corresponds to a multiple correlation of 0.95 with the other independent variables (Hair et al., 2010). Even though it indicates problems with multicollinearity, but still considered lower levels of collinearity and multicollinearity. Therefore, the degree and impact of multicollinearity should be below the suggested cutoff, *i.e.* VIF values of three (3) to five (5) (Hair et al., 2010).

3.8.2 Factor analysis

Factor analysis is a useful and powerful multivariate statistical technique to extract information effectively (Hair et al., 2010). In factor analysis, the design of the sample is

very important. As the matter of sample size and homogeneity of the sample solved, factor analysis is justified by taking several steps via SPSS software.

The correlation matrix is the initial indicator in ensuring the data matrix is suitable for factor analysis application (Hair et al., 2010). Basically the suitability of the data for factor analysis is achieved when the correlation in the matrices are larger than 0.30. Then, sample is measured for its appropriateness via two (2) main indicators, *i.e.* Kaiser-Meyer-Olkin Measure (KMO) of sampling adequacy and Bartlett's Test of Sphericity (BTOS). In general, the KMO value is between 0 to 1, where 0.90 is considered marvelous; 0.80 is meritorious; 0.70 as middling; 0.60 as mediocre and 0.50 as miserable. Thus, any value below than 0.50 is considered unacceptable and the anti-image correlation matrix is useful in this case for any possible remedies. The assessment of sampling adequacy problem is checked in the anti-image matrices. Generally, the items should be above 0.50 and if otherwise is a candidate of deletion of the item. The process of deletion begins with the smallest value of below 0.50 until the problem of sampling adequacy is corrected. Then, the revised measure of appropriateness of factor analysis is revisited. At this point, if the KMO is above 0.50, then the BTOS is checked for its significance level. The significance relationship (0.000) of BTOS indicates that the variables measured are uncorrelated. Concurrently, the revised anti-image correlation matrix should indicate that the sampling adequacy for each variable is above the 0.50 threshold before derived to factors and assessing overall fit.

The extraction process to derive at number of factors and assessing overall fit is based on principal components method with correlation matrix analysis and varimax rotation solution. The principal component analysis is applicable to analyze interrelationships among a large number of variables and is explainable in terms of common underlying dimensions or factors (Hair et al., 2010). It is a way to abbreviate items or information of the original variables into a group of small set of factors with a minimal loss of information. The varimax rotation ensures the factor axes are kept at right angles to each other which on average reduces the number of complex variables and improves interpretation (Coakes & Ong, 2011). It is considered most popular and in fact superior orthogonal factor rotation method in achieving a simplified factor structure (Hair et al., 2010). The principal component factor analysis is useful as a medium to simplify a data set prior to conducting any further analysis.

In the process of validating the data, the issue of generalizability is taken care via a method of split-half validation. The purpose is to ensure the factor model is stable and generalizable as well as not impacted by outliers. The strategy for examining the stability of the model is to observe if the factor structure and the communalities remain the same. Obviously the impact of outliers is not ignored besides the sample size that is impacted the findings in factor analysis (Hair et al., 2010; MacKenzie, Podsakoff, & Podsakoff, 2011).

3.8.3 Confirmatory factor analysis (CFA)

Philosophically, confirmatory factor analysis (CFA) is quite different from exploring factor analysis (EFA). Unlike EFA, CFA is specified the number of factors as well as the related variable loaded to the factors before continued with the analysis. Hence, a specific theory is being tested and confirmed in CFA. CFA is a medium for confirmatory test on measurement theory. It could provide a logically and systematically variables in representing constructs. Then, the measurement theory that is confirmed is transformed into a structural theory to fully specify a Structural Equation Modeling (SEM) model.

Measurement model (*i.e.* Figure 3.2) represent the measurement theory that need for validation before has been transformed into structural model. The essential assessment is to check for unidimensionality, validity and reliability of the reflective measurement theory model before further model development in SEM.

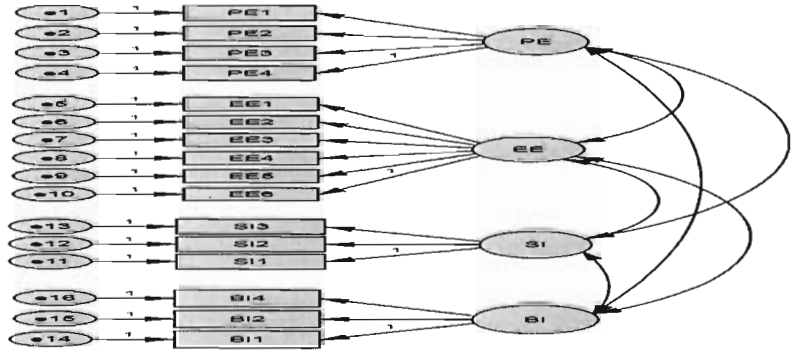

Figure 3.2
Sample of Measurement Model
Source: Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate Data Analysis (7/e ed.): Pearson Prentice Hall.

3.8.3.1 Unidimensionality of Measurement Model

Unidimensionality mean that a set of measured variables is explained by only a single underlying construct. The issue of unidimentionality is crucial to be considered it could influence the construct validity if cross-loadings and covariances between error terms (*i.e.* within-construct error covariance and between-construct error covariance) exists. Although the significant cross loadings and covariances between error terms' paths is freed in consideration to improve the model fit, however, is recommended as it could violates the assumptions of good measurement (Hair et al., 2010). Under unidimensionality, the other concerned is on the number of items per construct and also the level of identification.

The minimum number of items is three (3), however, it is preferable to have four (4) for adequate identification. As for construct identification, overidentified is preferable instead of underidentified or just identified. The identification is defined by the degrees of freedom of a model after all the parameters are specified. The underidentified models would not produce reliable results as unique solution is found. This type of identification means more parameters are estimated than unique indicator variable variances and covariances in the observed variance/covariance matrix. Just-identified would produce a perfect fit model which means there are just enough or saturated degrees of freedom to estimate all free parameters. This type of identification is not used to test a theory because the fitness is determined by circumstance. Overidentified models with an excess

number of degrees of freedom are required for statistical identification. This type of identification is able to produce a solution with positive degrees of freedom and a corresponding chi-square goodness-of-fit value (x^2 GOF).

3.8.3.2 Validity of Measurement Model

Validity is categorized into construct validity, convergent validity, discriminant validity, nomological validity and face validity. CFA result test or confirm a validity of a theoretical measurement model. The fundamental assessment of construct validity is the measurement of relationships between items and construct that is expected to revealed relatively high loadings. The recommended loadings is as minimum as 0.50 and ideally is 0.70 or higher (Hair et al., 2010). The higher the loadings represent the strong relationship of the items to its constructs that is one (1) of the indications of construct validity. Hence, even at significant level if the loadings is low than 0.50, the item is suggested to be deleted (Hair et al., 2010). However, if the loadings is lower than the threshold, but unless some other evidences suggest there are problematic, it is most likely to be retained to support content validity (Hair et al., 2010).

Construct validity is a measure to ensure a set of measured items are truly reflects the theoretical latent constructs. Convergent validity is also considered. This type of validity indicates the level of proportion of variance in common of a specific construct. The indicators are on the factor loadings, which should be between 0.50 and 0.70 or higher

(Hair et al., 2010). Second, indication is the average variance extracted (AVE), which is an average of squared completely standardized factor loading or average communality should be 0.50 and above (Hair et al., 2010). Thus, the loading of 0.71 squared equals 0.50, meaning half of the variation in the item is explained by the factor and the other half is explained by the error.

Discriminant validity provides evidence that each construct is unique and distinct from each other. The test is to compare the AVE between two (2) constructs with the square of the correlation estimated between the two (2) constructs which should be greater. The explanation is that a latent constructs have high variance in its item measures than another construct. Otherwise, it is evidence of cross-loadings which should be represented the measurement model and could create problem in CFA fit. All redundant items are either deleted or constrained. In addition, the correlation between exogenous constructs which is ≥ 0.85 also should be deleted or constrained to avoid multicollinearity problem (Awang, 2012).

Nomological validity and face validity are considered the main properties in validity. Face validity is a way to understand each item's content and meaning. Nomological validity is then cross-checked to examine the correlation among the constructs that supposed to be meaningful.

3.8.3.3 Reliability of Measurement Model

Finally, the reliability is tested via internal reliability; construct reliability; and AVE. Internal reliability is treated the same as cronbach's alpha (CA) application. Thus, the internal reliability is achieved if the construct's value is 0.70 and above (Awang, 2012; Hair et al., 2010) as calculated via SPSS. The indication of AVE is from the squared sum of factor loading. The AVE of 0.50 and above is the threshold accepted in achieving the reliability of measurement model (Awang, 2012; Hair et al., 2010). The construct reliability (CR) is achieved if the value reported for each construct is 0.60 and above. The CR between 0.60 and 0.70 is acceptable as a good reliability (Hair et al., 2010). The higher the CR indicates the existence of internal consistency which consistently represents the same latent construct.

3.8.3.4 Modification Method of Measurement Model

In addition to the validity process, diagnostic information is another form of addressing unresolved problems or improving the measurement theory model. The modification method includes checking on the fit of the model as well as identifying problems via standardized residuals, modification indices and specification search.

Standardized residual is individual differences between observed and fitted (estimated) covariance terms. The smaller the value means the model fit well. Residuals value that is positive or negative could specify item pairs that are not accurately predict the observed

covariance between the two (2) items. Hence, residual that is greater than 4.0 at significant level 0.001 is concerned and suggested a potentially unacceptable degree of error. Therefore, one (1) of the items should be dropped or eliminated.

Modification index is a calculation that reflects the overall chi-square (x^2) value, which could be reduced. Indeed, it is also estimated other's relationship that is not estimated initially. It is suggested that modification indices with value of 4.0 or greater could improve the model fit by freeing the corresponding path as this is evidence of potential cross-loadings.

A specification search on the other hand, is more on trial-and-error approach in applying possible changes in the measurement model. This search is actually suggesting a new relationship that could be best in improving the overall model fit by freeing the non-estimated relationship. However, as stressed in any approach suggested for modification, solely based on suggested changes is not recommended. Indeed, referring to the theory before any changes is essential in avoiding any misleading results.

3.8.3.5 Fitness of Measurement Model

A series of goodness-of-fit indexes are available as a guideline or benchmark, which reflects the fitness of the model to the data. At present, scholars have an agreement on certain fitness indexes need to be reported. The recommended fitness indexes are at least

three (3) comprises of at least one (1) from each categories of model fit, *i.e.* absolute fit, incremental fit and parsimonious fit (Awang, 2012; Hair et al., 2010).

Absolute fit indices are a direct measure of how well the model specified based on the observed data output. The indices under this category are x^2 statitstic; Goodness-of-Fit Index (GFI); Root Mean Square Error of Approximation (RMSEA); Root Mean Square Residual (RMR) and Standardized Root Mean Residual (SRMR); and Normed Chi-Square. The incremental fit indices are an assessment of how well the estimated models fit relative to some alternative baseline model (*i.e.* null model). Normed Fit Index (NFI); Tucker-Lewis Index (TLI); Comparative Fit Index (CFI); and Relative Non-centrality Index (RNI) are indices under the incremental fit indices. Parsimony fit indices on the other hand is designed to provide information on which model is the best among other set of competing models. The example of indices in this group would be Adjusted Goodness of Fit Index (AGFI) as well as Parsimony Normed Fit Index (PNFI).

The basic of Goodness-of-Fit (GOF) are Chi-Square (x^2) GOF and Degrees of Freedom (DF). x^2 GOF is the only statistical test of the difference between matrices in SEM via the following equation: $x^2 = (N - 1)(S - \sum k)$ *i.e.* $x^2 = (N - 1)$(Observed sample covariance matrix – SEM estimated covariance matrix); where N is the overall sample size. The x^2 value is increase or sensitive to sample size of more than 200. The estimated covariance matrix on the other hand, influenced by number of parameters is specified (*i.e.*

free). The level of acceptance for this absolute fit is when significance level is more than 0.05. Obviously, this condition is different from other technique that required a smaller p-value (*i.e.* less than 0.05) in order to reflect the existence of significance relationship. In SEM if p-value is small (statistically significant), it indicates that the covariance matrices are statistically different, which indicates problems with the fit. Thus, large p-value is expected and small x^2 in order to support the proposed theory fit reality. Although the x^2 test provides a test of significance, however, it could be accompanied with other absolute fitness indices. In fact, the x^2 is ignored if the sample size obtained is greater than 200 (Hair et al., 2010) due to p-value result is less meaningful as sample sizes become larger or the number of observed variables becomes large.

Degrees of Freedom (DF) are the amount of mathematical information available to estimate model parameters. The formula is DF = ½ [(p)(p+1)] – k; where p is the total number of observed variables and k is the number of estimated (free) parameters. Difference from regression, DF in SEM is based on the size of the covariance matrix, *i.e.* derived from the number of indicators in the model. Thus, sample size would have no effect on the DF estimation.

Goodness-of-Fit Index (GFI) is categorized under absolute fit indices that are less sensitive to sample size. The guideline to fit for GFI is within the range of zero (0) to one (1)) where the higher values indicate better fit. Recently, the usage of this fits index is

declined. However, in practice the acceptance level of GFI is more than 0.9 where over 0.95 is a good fit indication.

Root Mean Square Error of Approximation (RMSEA) is the widely acceptable fit index that attempts to avoid rejection of model due to the x^2 GOF test statistic. Indeed, RMSEA represents how well a model fits a population. Despite the argument of "good" and acceptable level that is suggested as below 0.05 or below 0.08, RMSEA is found as best suited for in a confirmatory or competing models strategy with large samples (Hair et al., 2010). As agreed the range from 0.05 to 1.00 is acceptable (Awang, 2012).

Root Mean Square Residual (RMSR) and Standardized Root Mean Residual (SRMR) is an error predicted for each covariance term creates a residual. When covariance are treated as input, residual is difficult to be interpreted. This is because the residual that in term of covariance are impacted by the scale of the indicators. The averages of standardized residuals (SR) that are directly comparable are zero (0). So the value or common rule is to scrutinize any SR exceeding 4.0 (*i.e.* $\pm$ 4.0). SRMR is the alternative of RMR that is the average of the SR is useful for comparing fit across models. Lower RMR and SRMR values show better fit and vice versa. Indeed, RMR, SRMR and RMSEA are categorized as badness-of-fit due to the indication of poor fit with high values. Thus, the threshold of SRMR is over 0.1 suggests a problem with fit.

Normed Chi-Square is a simple ratio of x^2 to the DF for a model. Generally, the ratio of 3:1 or less are associated with better fitting models. The acceptable level is violate if the sample size is large (*i.e.* greater than 750) or in the circumstances of high degree of model complexity.

Normed Fit Index (NFI) is one (1) of the original incremental fit indices. However, the usage of this index is less compared to the other indices in the group. The acceptable level of NFI is over 0.9 and is a good fit at 0.95. NFI is a ratio of the difference in the x^2 value for the fitted model and a null model divided by the x^2 value for the null model.

Tucker-Lewis Index (TLI) is a comparison of the normed chi-square values for the null and specified model. The values of TLI can fall below 0 (zero) or above one (1). However, the closer the values approach to one (1), the models is indicated a good fit. Indeed, the acceptable level is 0.9 and it is considered better or good fit at the level of 0.95.

Comparative Fit Index (CFI) is an improved version of NFI and the values range between zero (0) and one (1) where higher values is an indication of better fit. This index is the widely used in incremental fit indices group. Same as other indices' acceptable level, 0.9 is usually associated with a model fits and better fit at a value of 0.95.

Adjusted Goodness of Fit Index (AGFI) is an index that considered complexity of models. This index adjusts GFI by a ratio of the DF used in a model to the total DF available. AGFI favors to models with a minimum number of free paths. The AGFI is less frequently used due to the influence of sample size and model complexity.

Parsimony Normed Fit Index (PNFI) is adjusting the NFI by multiplying it times the parsimony ratio. Relatively as NFI, the higher the values indicate a better fit and it favor to less complex models.

3.8.4 Structural Equation Modeling (SEM)

A structural model is developed after the issues of unidimensionality, validity and reliability are addressed. In this stage of modeling the structural model, arrows to link all the related constructs are required which depends on the hypothesized relationships as in the theoretical framework. Basically, there are few steps involved in analyzing the structural model: (1) specify the schematic diagram of the research model based on theory; (2) draw the structural model based on the schematic diagram; (3) analyzing the measurement model for all latent constructs using the CFA; (4) analyzing the AMOS structural model based on the theoretical interrelationships among the constructs; and (5) obtain the AMOS text output, interpret the results and make a decision concerning the hypothesized relationships.

An acceptable result should be achieved in the measurement model before the assessment to the structural model is preceded. This is because without the achievement of the acceptable fit, there is no improvement could be expected in the structural relationship (Hair et al., 2010). In the structural model, all constructs are assumed to be zero (0) meaning that no correlation relationships. Therefore, the x^2 GOF for the structural model is higher than the x^2 GOF for the measurement model. However, the x^2 value is useful in determining the overall fit. In addition, at least one (1) index from each absolute and incremental index also required. Even though the measures ascertain the validity of the structural model, but there is a need to compare between the overall fit of measurement structural models. Hence, the closer the structural model GOF to the measurement model, the better the fitness.

A structural model is more constrained than a measurement model as depicted in Figure 3.3. It is merely because in the structural model not every constructs are related as hypothesized not to have direct relationship with each other. Thus, there are relationships, which are fixed to zero (0) and are not allowed to be estimated. In fact, the added constraint or deletion of path would have no effect or reduced on the chi-square value and the value is remained unchanged or decreased. Thus, the structural model is not fit any better (*i.e.* having lower x^2) than the overall measurement model or else it is concluded as lacks of validity. In testing the good structural model, fit relationships alone is not the parameter estimate. An individual parameter that represents each specific hypothesis is

considered too. Hence, statistically each relationship is significant and in accordance to the predicted direction. Meaning that, hypothesis that is predicted to have positive relationship, the value is greater than zero (0) and less than zero (0) if negatively predicted. In addition to that, the characteristic is checked via the completely standardized loading estimates. The variance-explained estimates (*i.e.* R^2) for the endogenous construct are also one (1) of the parameters in checking the theory validity.

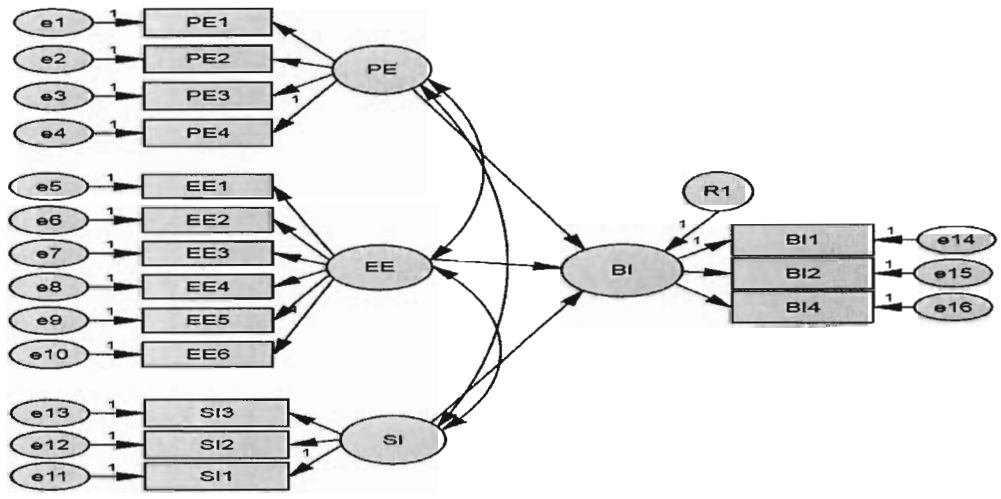

Figure 3.3
Sample of Structural Model
Source: Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate Data Analysis (7/e ed.): Pearson Prentice Hall.

3.8.5 Moderating model

The interaction effects or moderators significance in this research is tested in the structural model. For this study, there are two (2) difference approaches applied on moderators testing, *i.e.* via bootstrapping application for moderator-volume of transaction and product indicator application for the other moderators. This is simply due to difference scale in those moderators, which volume of transaction is checked via categorical scale and the other moderators, *i.e.* design characteristic, incentive alignment, user participation, training as well as organization and peer supports are tested via interval scale.

Bootstrapping approach is design to cover on the issue of multivariate non-normality in particular of non-continuous variables (Byrne, 2010b). This approach is agreeable by many scholars in social sciences stream (Byrne, Baron, & Balev, 1998; West, Finch, & Curran, 1995; Zhu, 1997). The basic principle of bootstrapping is its ability to create multiple subsamples and simultaneously examine the parameter distributions. Indeed, the distribution is concrete and enables comparison of repeated samples' and parametric values over the original sample. The comparison is based on the average mean values; calculated standard error; as well as on the stability of goodness-of-fit indices.

Bootstrapping is applied in a situation of non-normal data or non-continuous variables (Byrne, 2010b). This is because as the distribution is non-normal, the estimation made via

bootstrapping seems to be less biased than the standard maximum likelihood (ML) estimates. The procedure of bootstrapping is conducted via AMOS graphics with a creation of one (1) set of parameter estimation and two (2) sets of related standard errors. The parameter estimates is part of the output of ML and GLS estimation choices. Whereas, the standard error is based on formulas derived from the bootstrap samples. The ML parameter estimates produced a report on the original sample cases and AMOS derived with a summary of the bootstrap iterations. The bootstrap iterations process provides information on the number of iterations required to fit the hypothesized model as well as the extent to which the process is successful.

The output tree is presented in five (5) columns, *i.e.* S.E.; S.E. - S.E.; Mean; Bias; and S.E. Bias columns. S.E. column represent an estimation of standard error of each loading parameter in the model. The value is actually the standard deviation of the parameter estimates. The values then are compared to the original samples' ML standard error estimates. S.E. - S.E. column provides information on its approximate standard error of the bootstrap. The value should be relatively very small from S.E.. The mean is the mean value and it should not necessarily as exactly as the original estimations. Bias in the fourth column is the difference of mean between the bootstrap and the original estimations. If the difference is high, there is evidence of bias and vice versa. The last column contained information on S.E. Bias that reporting the approximate standard error of the bias estimates.

In this research, the volume of transaction is measured between the low and high volume of transaction. It is simply to determine which group gives impact on the direct relationship toward behavioral intention. Thus, the moderator is analyzed using multi-group for latent constructs testing. Therefore, the data are split into two (2) groups based on the median of the moderator variable and grouped as group one (1) - low volume of transaction and group two (2) - high volume of transaction. Then, the final model is tested via these two (2) groups of volume on the identified path of interest where the effect of moderator variable is assessed. For each group, there are two (2) models created and saved differently to differentiate between model with constrained and unconstrained fix relationship. The constrained model is fixed with one (1) on the path of interest and the unconstrained model is freely estimated. Indeed, for each category of volume of transaction, there are two (2) models which are compared in terms of chi-square and degree of freedom (Figure 3.4). If the chi-square value between the constrained and unconstrained model differs by more than 3.84, then the moderator variable has a significant moderating effect on the relationship between the constructs in the selected part (Awang, 2012).

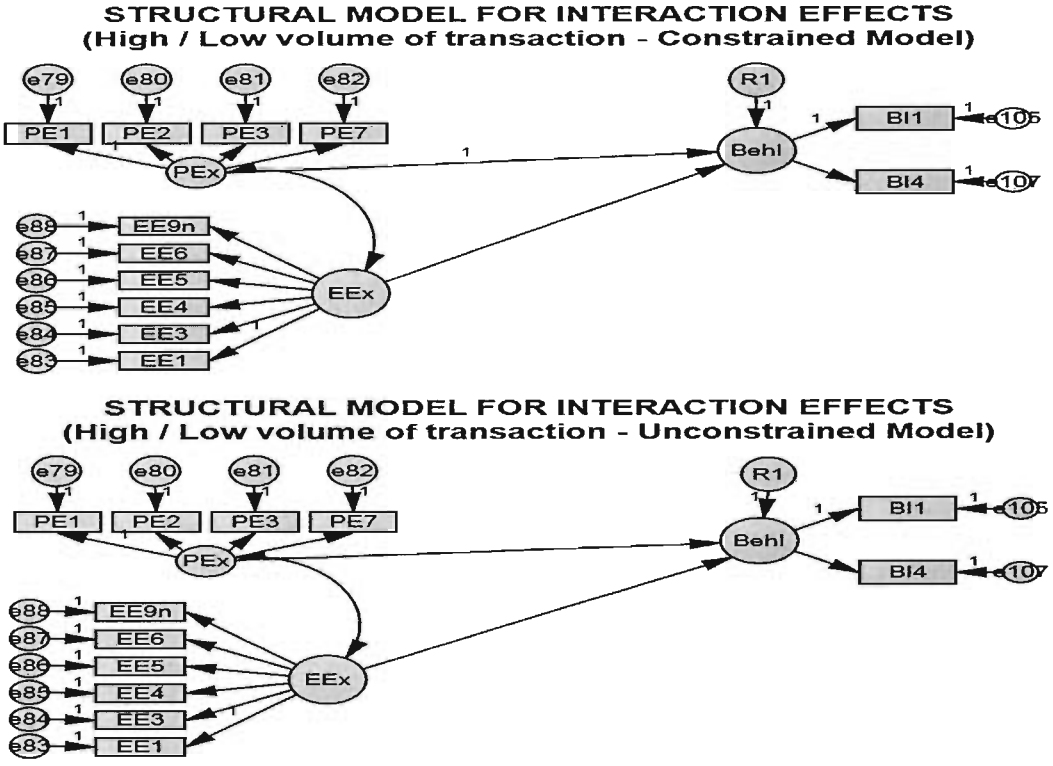

Figure 3.4
Sample of Interaction Effect of Moderating Model- volume of transaction

As for the purpose, product indicator approach via the Visual PLS as proposed by Chin, Marcolin and Newsted (1996) is enhanced, simplified and molded to fit. This approach is supported with systematic graphical ways is preferred compared to the other suggested approach (Byrne, Shavelson, & Muthen, 1989; Hair et al., 2010; Kenny & Judd, 1984) due to some limitations in theoretical analysis and practically. Due to inappropriateness of those approaches, Ping (1995) produce a parsimonious estimating technique for interaction and quadratic latent variables (*i.e.* Figure 3.5). This technique required three (3) simple steps: (1) generate product terms for interaction effects (*i.e.* reflecting x, z and

y); (2) create a construct for interaction effects (*i.e.* between predictor (x) and moderator (z)); and (3) assign product indicators to construct. The limitations in terms of measuring errors effects, biased and inconsistent coefficient estimates, loss of statistical power, declines in reliability (Ping, 1995), a product indicator approach via PLS procedure is applicable. This approach which considered the measurement of errors, viewed the independent variables, x (independent variable), z (moderator), and x*z (interaction effect) as indicators. This way (multiple/parallel indicators) is reflected the true underlying continuous latent construct of interest.

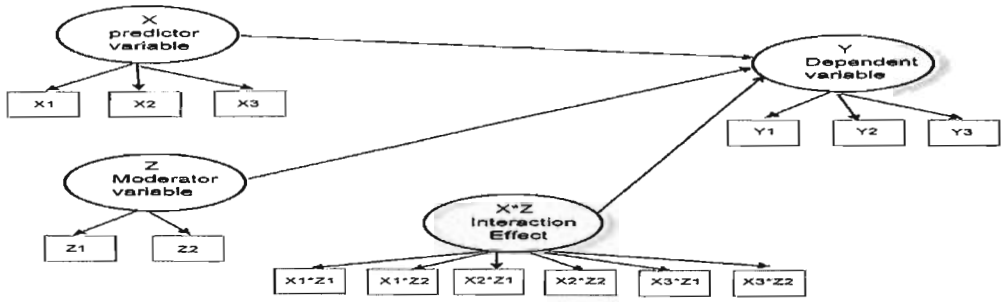

Figure 3.5

Sample of Interaction Effect of Moderating Model

Source: Ping, R. A. (1995). A Parsimonious Estimating Technique for Interaction and Quadratic Latent Variables. Journal of Marketing Research, 32 (3), 336-347.

A moderating or interaction effect is detected when changes in a direct relationship between independent and dependent variables due to the third variable or construct (Hair et al., 2010). The effect either small or large is indirectly have some contributions to the direct relationship (Chin et al., 1996). Hence, in order to keep the consistency in the results for better reporting and improve the body of knowledge, the usual significance levels (p = .05 or .01) are needed. A statistically significant difference between models

indicated that the path estimates are different. There is a time where model fit is significantly better at separate path estimates compared to a time where moderation does exist. It is also possible to have insignificant direct relationship change to significantly related as moderator incorporated. However, there is no support of moderators if the models are not significantly different. This is because the path estimates have no interaction effect between groups. Thus, the testing is merely looked at the significant differences in the two (2) models (*i.e.* direct and interaction models) in order to support as well as checked the hypothesis of differences in the path estimates and is theoretically consistent (Hair et al., 2010). As a result, the effects of x and y is either reduced or enhanced. Although moderation implies a weakening of a causal effect, a moderator could also reverse or enhance that particular effect (Awang, 2012).

3.9 Pilot study

A pilot study is conducted on 150 respondents where questionnaire is posted with a token of appreciation. This survey is purposely to test the instrument used within a small group of tax agents/preparers. The instrument previously is tested via Delphi technique in the form of interviews. The participant for the Delphi technique consists of tax agents/preparers; tax authorities; as well as academicians selected from the list of registered tax agents/preparers in Kedah and Selangor state. The purpose is to have a great chance in obtaining unbiased information within the knowledge and judgment of the experts (Green, Armstrong, & Graefe, 2007; Linstone & Turoff, 1975). Out of the

150 posted questionnaires for pilot test purposes, 56 are returned and three (3) questionnaires are returned due to changing in mailing address. The total of 53 respondents is qualified and usable to be further tested in this study.

In testing the instrument, the Cronbach's alpha technique is applied to determine the internal consistency (Coakes, 2005d). In addition, the factor analysis that is a form of data reduction technique is taken into consideration. This is a way to determine whether the items are tapping into the same construct towards a more reliable test (Coakes, 2005c; Hair et al., 2010). The summary of the reliability analysis for each construct put forward in this study is as in Table 3.2.

On the whole, the cronbach's alpha value for each construct is ranging from 0.82 to 0.93. However, few items are deleted and the value increase to the range of 0.85 to 0.94. The lowest reliability level reported for the organization and peer supports (OPS) construct with a cronbach's alpha value of 0.82. This value increased to 0.87 after two (2) items are removed. On the other hand, the highest reliability level is on attitude (ATT) construct with the cronbach's alpha value reported as 0.94. This construct improved from 0.93 after one (1) item being removed. The other constructs such as facilitating condition (FC), user participation (UP) and training (T) also reported a slightly change in the cronbach's alpha after few items are deleted. In this test, the cronbach's alpha value for performance expectancy (PE) is failed to be determine as the sample size is not sufficient. The removed or deleted items is necessary due to the correlation in the matrices' value of item

is low that is below 0.5 (Hair et al., 2010). The item could lead to a problem of sampling adequacy if remained in the analysis.

Table 3.2
The instruments' reliability coefficient (n=53)

	Construct	Number of items		Cronbach's Alpha	
		Before deleting	After deleting	Before deleting	After deleting
1.	Behavioral intention	5	5	.926	.926
2.	Attitude	15	14	.929	.935
3.	Performance expectancy	17	17	NA	NA
4.	Effort expectancy	12	12	.933	.933
5.	Social influence	9	9	.859	.859
6.	Facilitating condition	12	10	.852	.891
7.	Perceived value	8	8	.891	.891
8.	Design characteristics	5	5	.901	.901
9.	Incentive alignment	8	8	.911	.911
10.	User participation	10	9	.896	.907
11.	Training	7	6	.843	.852
12.	Organization and peer supports	10	8	.815	.870

*NA – Data not available

In addition to the reliability test, factor analysis is required in determining whether items are patters into the same construct or otherwise. Indeed, the suitability of the data in terms of correlation in the matrices is checked on each constructs. Item with correlation value less than 0.30 is deleted. Anti-image correlation matrix is also focused in order to ensure the adequacy of the sample in deriving to the overall fit. Hence, for the adequacy purposes, value of anti-image correlation item of above 0.50 is retained in the model. Then, the appropriateness of data via the Kaiser-Meyer-Olkin (KMO) and Batlett's Test of Sphericity (BTOS) is ensured to derive at KMO's value of above 0.50 and at

significance BTOS of 0.000. If it is not achieved, the anti-image correlation matrices are rechecked and item is deleted to achieve at a minimum value of 0.51.

This data reduction technique is finally derived to a set of crucial items in each constructs developed for the study. The summary of the factor analysis result is as highlighted in Table 3.3. In overall, KMO measures of sampling adequacy for the 11 constructs are ranged from 0.67 to 0.88. This range is considered acceptable as the general rule of thumb judged the construct as adequate if above 0.50 (Hair et al., 2010). The items are behavioral intention (BI), attitude (ATT), effort expectancy (EE), social influence (SI), facilitating condition (FC), perceived value (PV), design characteristics (DC), incentive alignment (IA), user participation (UP), training (T) as well as organization and peer supports (OPS). In this test too, performance expectancy (PE) is unable to be tested as the sample size compared to the items examined is not adequate. The highest KMO value is on perceived value (PV) construct that is 0.88. Whereas, the lowest KMO value is reported in organization and peer supports (OPS) construct at 0.67.

In terms of number of factors to be retained, in all the 11 constructs are comprised into one (1) to three (3) factors. The attitude (ATT) and social influence (SI) items were appeared in three (3) factors and behavioral intention (BI) as well as design characteristics (DC) emerged into one (1) factor. The other seven (7) constructs with two (2) factors. However, those factors are remained as they meet the specified percentage of

variance explained that is above 60 per cent (Hair et al., 2010). As for the value of BTOS, all the items are significant (Sig. 0.000).

Table 3.3
The instruments' factor analysis (n=53)

	Construct	No. of items	No. of factors	KMO value	Variance explain
1.	Behavioral intention	5	1	.802	77.71%
2.	Attitude	14	3	.754	80.07%
3.	Performance expectancy	17	NA	NA	81.82%
4.	Effort expectancy	12	2	.867	73.94%
5.	Social influence	9	3	.730	86.37%
6.	Facilitating condition	10	2	.817	77.41%
7.	Perceived value	8	2	.879	72.33%
8.	Design characteristics	5	1	.769	72.31%
9.	Incentive alignment	8	2	.837	78.63%
10.	User participation	9	2	.797	71.43%
11.	Training	6	2	.739	84.51%
12.	Organization and peer supports	8	2	.670	87.35%

*NA – Data not available

The pilot test results are purposely to check on the suitability of the data, appropriateness of the data as well as on the internal consistency of the data. Indirectly, it represented the fitness of the questionnaire to process with the real data for this research. Using the factor analysis; structural equation modelling; partial least square; and bootstrapping, all the item in the questionnaire is remained as it is without any deletion on the question as whole. This is mainly because via various techniques, it could give different outcome as the sample is larger than the pilot test's sample.

CHAPTER 4

RESULTS ANALYSIS

4.1 Introduction

The main concern of this chapter is to reveal the results gathered from the respondents in the form of mailing approach. On the whole, there are eight (8) parts of discussion consisting of sampling and respondent descriptive statistics of the respondents or tax agents/preparers and the details profile of them. Next, the discussion is on the research constructs analysis, *i.e.* the exogenous and endogenous variables. This followed with results assemble from data screening process and tests in achieving the multivariate assumptions. The discussions then, focus on the results put forward to confirm the factor analysis. Finally, discussion on structural equation modelling analysis is presented in details.

4.2 Sampling profile

Total of 714 questionnaires (Appendix 1) is distributed to the selected random respondents throughout Malaysia. Two (2) weeks' times is given to the respondents to answer and sent back the questionnaire using the stamped envelope with address to the researcher. A month period of time is allocated before a letter of reminder is sent to respondents which in total three (3) reminders are sent to all selected respondents. After few months of waiting with no reply, despite the reminders, the analysis process is started

based on the reply of 265 respondents. Out of the total, 17 respondents are disqualified due to several reasons: three (3) questionnaires are returned due to change in address, the personnel is retired as well as returned with a blank sheet. Another four (4) questionnaires are returned without a complete feedback and the remaining 10 questionnaires are excluded due to outliers. Due to these reasons, only 231 respondents are qualified for further analysis. The amount of qualified respondents is considered enough for analysis as suggested by Coakes (2005); Gravetter and Wallnau (2011) as well as Hair et al. (2010). According to Gravetter and Wallnau (2011), the sample represents its population where the size is definitely influenced the accuracy of the sampling. Therefore, the large sample is more accurate and mean closer to its population rather than the small sample. Coakes (2005) on the other hand, more concern on the normality of the data that are difference due to the sample size. The definition of normality is violated if the sample is considered small, *i.e.* less than 30. In fact, the sample size really matter in factor analysis as mentioned by Hair et al. (2010). The minimum sample required in performing factor analysis is to have at least five (5) times of the observed variables and the most is 10 times. However, in general, the size of sample of 100 or larger is acceptable and less than 50 is be preferred. In fact, there is finding indicated that a good recovery of population parameter is possible even with small sample sizes (e.g. 60 to 100) if the communalities are high and factors are strongly determined. Otherwise, a large sample size is required (e.g. 300 to 500) if the communalities are low and factors are weak (MacCallum, Widaman, Zhang, & Hong, 1999).

4.3 Respondent profile

The descriptive statistic of the qualified respondents in detail is presented in Table 4.1. The information is categorized in terms of age, race, gender, qualification, location, experience, as well as number of clients in tax e-filing. In total, from the 231 respondents, the respondents are 128 male respondents (55.4 per cent) and 103 females (44.6 per cent). The ethnicity distribution of the respondents is Chinese, 135 respondents representing 58.4 per cent, Malay representation of 36.8 per cent and the Indian and other races representation of 4.8 per cent. The average age of the respondents is 42.9 years with standard deviation of 1.45. In terms of education level, most of the respondents hold a professional qualification with 34.2 per cent and bachelor degree holders comprise of 103 respondents (44.6 per cent). Master degree and diploma holders are each with 11 and 25 respondents (4.8 and 10.8 per cent) respectively. The respondents with certificate and the least with upper secondary qualification are seven (7) and four (4) which are 3.0 and 1.7 per cent respectively.

In terms of application part, the majority of the respondents have three (3) years of experience with e-filing (25.5 per cent), 34.2 per cent of the respondents with less than three (3) years of experience and 40.3 per cent with four (4) to seven (7) years of experience in the tax e-filing. The majority of respondents who have experience with e-filing engaged with more than 100 clients per year (54.1 per cent) or else with less than 20 clients (13.0 per cent). The majority of respondents are located in Selangor (15.1 per

cent), followed by Kuala Lumpur (14.3 per cent), Kedah (12.6 per cent), Johor (11.7 per cent), Sabah (9.1 per cent) and Pulau Pinang (8.6 per cent). The other locations such as Perlis, Perak, Melaka, Pahang, Terengganu, Kelantan and Sarawak comprise of respondents less than 10 per cent. The lowest representatives are from Negeri Sembilan and Labuan with one (1) respondent only. The details of respondents' descriptive statistics are attached in Appendix 2.

Table 4.1
Descriptive Statistic of Respondents (n=231)

Demography	Frequency	Percent	Cumulative Percent
Age:			
20 – 29 years	53	22.9	22.9
30 – 39 years	46	19.9	42.9
40 – 49 years	44	19.0	61.9
50 – 59 years	42	18.2	80.1
60 years and above	46	19.9	100.0
Total	**231**	**100.0**	
Race:			
Malay	85	36.8	36.8
Chinese	135	58.4	95.2
Indian	9	3.9	99.1
Others	2	0.9	100.0
Total	**231**	**100.0**	
Gender:			
Male	128	55.4	55.4
Female	103	44.6	100.0
Total	**231**	**100.0**	
Qualification:			
Upper secondary	4	1.7	1.7
Certificate	7	3.0	4.8
Diploma	25	10.8	15.6
Bachelor	103	44.6	60.2
Master	11	4.8	64.9
Ph.D	2	0.9	65.8
Professional	79	34.2	100.0
Total	**231**	**100.0**	

Table 4.1 (Continued)

Demography	Frequency	Percent	Cumulative Percent
Location:			
Perlis	2	0.9	0.9
Kedah	29	12.6	13.5
Pulau Pinang	20	8.6	22.1
Perak	17	7.4	29.5
Selangor	35	15.1	44.6
Kuala Lumpur	33	14.3	58.9
Negeri Sembilan	1	0.4	59.3
Melaka	12	5.2	64.5
Johor	27	11.7	76.2
Pahang	7	3.0	79.2
Terengganu	9	3.9	83.1
Kelantan	12	5.2	88.3
Sabah	21	9.1	97.4
Labuan	1	0.4	97.8
Sarawak	5	2.2	100.0
Total	**231**	**100.0**	
Experience:			
1 time	35	15.2	15.2
2 times	44	19.0	34.2
3 times	59	25.5	59.7
4 times	32	13.9	73.6
5 times	34	14.7	88.3
6 times	10	4.3	92.6
7 times	17	7.4	100.0
Total	**231**	**100.0**	
Tax E-filing clients:			
20 clients and below	30	13.0	13.0
21 – 40 clients	25	10.8	23.8
41 – 60 clients	16	6.9	30.7
61 – 80 clients	9	3.9	34.6
81 – 100 clients	26	11.3	45.9
101 clients and above	125	54.1	100.0
Total	**231**	**100.0**	

4.4 Research constructs analysis

The table below (Table 4.2) represents a descriptive statistic result for all constructs. As discussed in this research, there are one (1) endogenous variable, *i.e.* behavioral intention and five (5) exogenous variables, *i.e.* performance expectancy; effort expectancy; social influence; facilitating condition; and perceived value. In addition, five (5) constructs (e.g. design characteristic, incentive, participation, training and support) are categorized as moderating constructs. The attitude constructs is treated as independent variable, which purposely to test the robustness of the UTAUT theory as whole. Another construct that is volume of transaction is analyzed differently as the moderating variable is in a categorical form, unlike the other moderating variables, which are tested via interval scale. On average all the constructs are positive in nature. The highest standard deviation is recorded in performance expectancy (17.36) and the lowest presented in behavioral intention (2.71).

Table 4.2
Descriptive statistic result of each constructs (n=231)

Constructs	No. of items	Level	Minimum	Maximum	Mean	Standard Deviation
Performance expectancy	17	+	34	119	90.18	17.36
Effort expectancy	12	+	31	80	56.00	8.02
Social influence	9	+	9	63	42.98	11.19
Facilitating condition	11	+	33	83	62.68	9.06
Perceived value	8	+	25	54	36.72	5.04
Design characteristic	5	+	5	35	27.77	5.44
Incentive	8	+	8	56	37.75	10.01
Participation	10	+	10	70	49.39	12.10
Training	6	+	17	45	36.18	4.95
Support	8	+	19	65	50.11	7.84
Attitude	12	+	35	99	68.24	9.31
Behavioral intention	4	+	14	33	22.55	2.71

4.5 Data screening and multivariate assumption

Data screening process is conducted in order to make sure that the data are correctly entered and the variables are normally distributed for further analysis purposes. Initially, the respondents are expected to be divided into two (2) groups comprise of early reply and late reply respondents. However, the mentioned groups failed to be form due to some limitation as no feedback even after three (3) times of reminders. Therefore, the 231 respondents are divided into two (2) groups as randomly selected using the SPSS software. The two (2) groups of respondent are tested for any significant difference in responses via t-test (Appendix 3). The two (2) -tail significance for behavioral intention responses indicate that $p > 0.05$ and therefore, is not significant. Indeed, the two (2) groups must come from the same population because no significant difference exist ($t = 1.216$, $p = 0.225$). Further, the missing data in responses are identified and out of 265 feedbacks, 24 questionnaires are eliminated due to disqualified, returned in blank and not completed. The remaining 241 feedbacks are utilized for further analysis and sufficient as suggested by Hair et al. (2010). However, the final respondents that fit to move ahead in the analysis are 231 after outliers are detected via univariate (z value $> \pm 3.0$) and multivariate (mahalanobis distances value $> \pm 2.58$).

The next process in examining data after missing data analysis and outliers detection is tested for the statistical assumptions underlying of the multivariate analysis. The statistical assumptions tested are on normality, homoscedasticity, linearity and

multicollinearity. The normality is referred to the shape of the data distribution and its correspondence to the normal distribution (details as in Appendix 3). The simplest diagnostic test is via a visual checking of the normal plot of regression standardized residuals as in Figure 4.1. The cumulative distribution of the actual data value with the cumulative distribution of a normal distribution represented in straight diagonal line. Thus, it represents a normal distribution where the actual data distribution closely follows the diagonal. This pattern is detected in all the other constructs of behavioral intention.

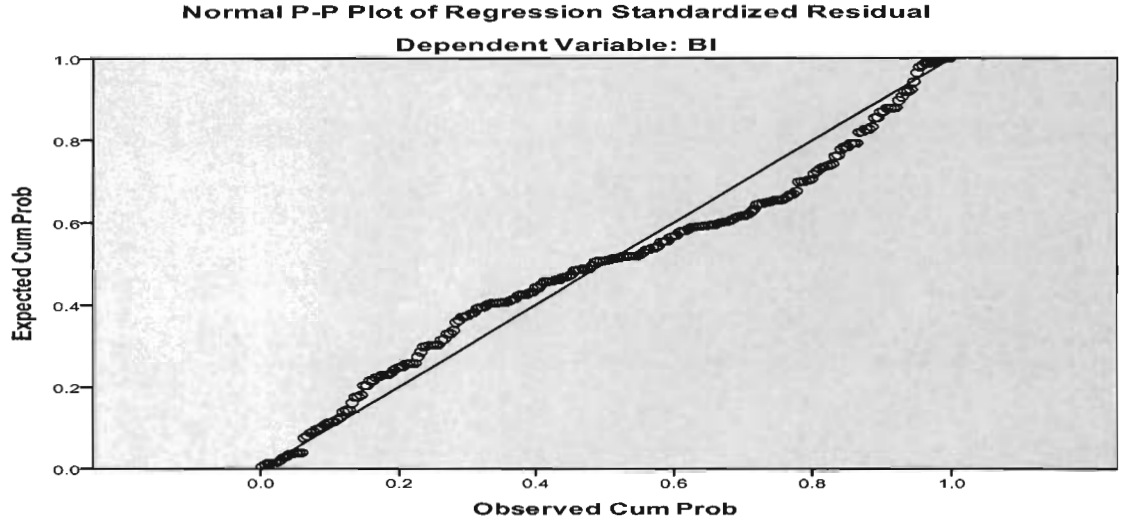

Figure 4.1
Normal P-P Plot of Regression Standardized Residual

Statistically, this assumption is referred to the skewness and kurtosis. It is also satisfied that the data distribution is normal. This is represented in Table 4.3 where the two (2) values or distribution based on the significance level are not exceeds the specified critical value, *i.e.* $\pm$ 2.58 (.01 significance level) and $\pm$ 1.96 (.05 significance level) (Coakes &

Ong, 2011; Hair et al., 2010). The details' statistical result is as in the attachment (Appendix 3).

Table 4.3
Statistical Result of Skewness and Kurtosis for All Construct (n=231)

	Skewness		Kurtosis	
	Statistic	**Std. Error**	**Statistic**	**Std. Error**
Performance expectancy	-1.072	.160	1.795	.319
Effort expectancy	-.169	.160	1.073	.319
Social influence	-.474	.160	.243	.319
Facilitating condition	-.528	.160	.580	.319
Perceived value	.444	.160	.846	.319
Design characteristic	-1.099	.160	1.674	.319
Incentive	-.535	.160	-.299	.319
Participation	-.639	.160	.373	.319
Training	-.766	.160	.643	.319
Support	-.930	.160	1.802	.319
Attitude	-.207	.160	1.803	.319
Behavioral intention	.768	.160	4.122	.319

The best test of homoscedasticity for two (2) metric variables is via graphically (as attached in Appendix 3). As in Figure 4.2, the scatterplots of data points for the variables portrait a normal distribution. This exhibit equal dispersion across all data value (*i.e.* homoscedasticity). Hence, the homoscedastic relationships resulted in better predictions at some level of independent variable than the others (Hair et al., 2010).

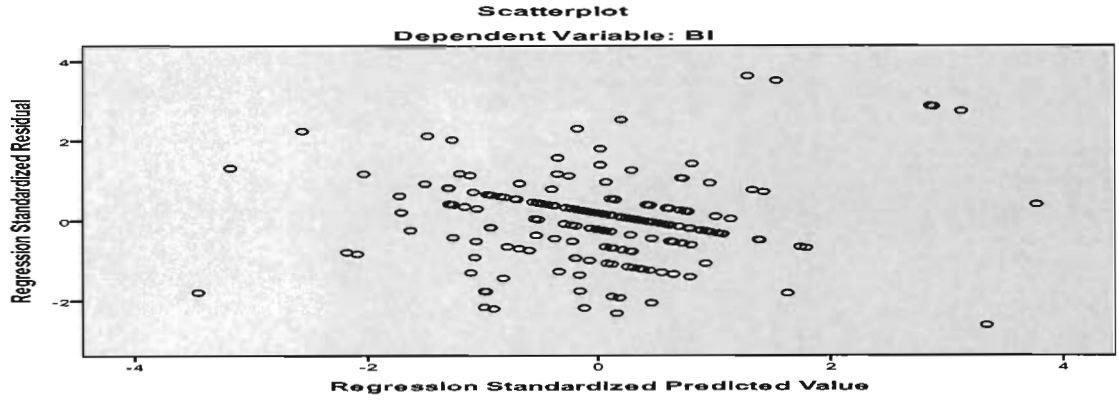

Figure 4.2
Scatterplot of Independent Variables and Behavioral Intention

Statistically, the Levene test is useful for homoscedasticity (Table 4.4). The probability of the relationships between independent variables shows a higher value than the significance level ($p < 0.001$). Thus, the homoscedasticity assumption between non metric variable, *i.e.* gender and all metric variables is achieved. The details' test result is retrieved from the attachment (as in Appendix 3).

Table 4.4
Homoscedasticity test results

Metric Variables	Non Metric Variable (Gender)	
	Levene Statistic (F value)	Significance
Performance expectancy	.235	.628
Effort expectancy	.331	.566
Social influence	.041	.841
Facilitating condition	1.115	.292
Perceived value	6.451	.021
Design characteristic	4.654	.032
Incentive	.003	.959
Participation	.077	.782
Training	.210	.647
Support	.4240	.041
Attitude	5.857	.016
Behavioral intention	2.188	.140

The most common medium to represent linearity is via scatterplot of the variables (Figure 4.2). The scatterplot of residuals against predicted values show no relationship between them and this is consistent with the assumption of linearity.

The multicollinearity assumption is examined if any single independent variable's predictive power associated or correlated with the other independent variables. The assumption is tested via Pearson-Product Moment correlation, tolerance value and Variance Inflation Factor (VIF). The Pearson-Product Moment correlation output as in Table 4.5 confirmed the result of the scatterplot (Figure 4.2) that a significant positive relationship exists between the variables. The highest correlation is 0.614 between facilitating condition and design characteristics. Inversely, the lowest correlation reported is in incentive and training relationship (0.038). The indication of multicollinearity assumption is not violated also proved by tolerance value and VIF as in *Table 4.6: Multicollinearity testing statistic for all constructs*. The tolerance value for all construct is below the threshold (*i.e.* 0.10). The degree and impact of multicollinearity also revealed values below the suggested cutoff, *i.e.* VIF values of three (3) to five (5) as recommended by Hair et al. (2010). In addition, the condition index with more than 30 (threshold value) have no variance proportions of value 0.90 and above for two (2) or more variance proportions. This indicates problems with multicollinearity, but still considered lower levels of collinearity and multicollinearity.

Table 4.5

Pearson Correlation for All Constructs n=231)

	BI	ATT	PE	EE	SI	FC	PV	Design	Incentives	Part	Training	Support
BI	1.000											
ATT	.420**	1.000										
PE	.210**	.577**	1.000									
EE	.300**	.588**	.573**	1.000								
SI	.129*	.388**	.574**	.314**	1.000							
FC	.212**	.370**	.569**	.500**	.499**	1.000						
PV	.173**	.316**	.385**	.406**	.322**	.406**	1.000					
Design	.201**	.432**	.532**	.537**	.365**	.614**	.290**	1.000				
Inc	.105	.207**	.165**	.142*	.504**	.222**	.262**	.158**	1.000			
Part	.109*	.118*	.168**	.255**	.337**	.375**	.320**	.097	.384**	1.000		
Training	.044	.046	.234**	.129*	.124*	.383**	.124*	.208**	.038	.399**	1.000	
Support	.153*	.345**	.440**	.360**	.512**	.497**	.301**	.411**	.282**	.253**	.204**	1.000

Notes: ** Correlation is significant at the 0.01 level (1-tailed), * Correlation is significant at the 0.05 level (1-tailed), BI = Behavioral Intention, PE = Performance Expectancy, EE = Effort Expectancy, SI = Social Influence, FC = Facilitating Condition, PV = Perceived Value, Design = Design characteristic, Inc = Incentive alignment, Part = Participation, Training = Training, Support = Support

Table 4.6

Multicollinearity Testing Statistic for All Constructs (n=231)

Model	Collinearity Statistics		Condition Index	Variance Proportions											
	Tolerance	VIF		(Constant)	ATT	PE	EE	SI	FC	PV	Des	Inc	Part	Train	Supp
(Constant)			1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
ATT	.542	1.844	13.113	.00	.00	.01	.01	.04	.00	.00	.02	.31	.07	.00	.00
PE	.388	2.579	15.148	.00	.00	.02	.00	.16	.00	.00	.01	.01	.25	.03	.00
EE	.464	2.157	18.911	.01	.01	.02	.00	.21	.00	.01	.00	.42	.23	.00	.00
SI	.428	2.337	23.858	.03	.03	.01	.00	.04	.02	.05	.55	.03	.07	.01	.02
FC	.407	2.455	24.751	.01	.06	.06	.08	.03	.01	.03	.01	.00	.12	.18	.14
PV	.721	1.387	28.534	.00	.00	.17	.01	.00	.00	.06	.00	.08	.03	.26	.43
Des	.500	2.000	30.620	.00	.10	.01	.03	.06	.02	.61	.02	.01	.04	.00	.18
Inc	.644	1.552	33.509	.06	.14	.51	.02	.38	.01	.03	.04	.11	.00	.00	.18
Part	.590	1.694	40.335	.00	.10	.03	.34	.00	.51	.08	.31	.02	.10	.01	.02
Train	.710	1.409	42.329	.00	.35	.00	.49	.07	.43	.00	.02	.00	.02	.11	.01
Supp	.636	1.572	49.346	.88	.21	.16	.03	.00	.00	.12	.02	.01	.09	.40	.01

Notes: Constant = Behavioral Intention, ATT = Attitude, PE = Performance Expectancy, EE = Effort Expectancy, SI = Social Influence, FC = Facilitating Condition, PV = Perceived Value, Des = Design characteristic, Inc = Incentive alignment, Part = Participation, Train = Training, Sup = Support

4.6 Factor Matrices for Behavioral Intention Constructs

A data sets is simplified via a principal component factor analysis by reducing a number of variables or retaining the variance in the original variables. There are several criteria required to be fulfill, *i.e.* correlation matrix, Kaiser-Meyer-Olkin measure (KMO) and Bartlett's Test of Sphericity (BTOS).

In overall, the performance expectancy is fit based on the principal components method with correlation matrix analysis and varimax rotation solution. The 17 items of data matrix is suitable for factor analysis application as the matrices are larger than 0.30 (Hair et al., 2010). The KMO measure of sampling adequacy (*i.e.* 0.894) indicated that the data are meritorious and BTOS is significance with 0.000 significance level represented the variables measured are uncorrelated. Obviously, the anti-image correlation matrix that indicated the sampling adequacy for the 17 variables are above 0.50 threshold (Hair et al., 2010). The 17 items in performance expectancy's construct are remained and categorized into three (3) factors accordingly to the factor loading as listed in Table 4.7, *i.e.* perceived usefulness, outcome expectations and job-fit. Each factor is loaded with more than 0.50 where factor one (1) comprises of 10 items with factor loadings ranging from 0.625 to 0.878. Factor two (2) comprises of five (5) items with factor loadings ranging from 0.565 to 0.922. Factor three (3) comprises of two (2) items with loadings of 0.651 and 0.800. The eigenvalues greater than one (1), *i.e.* 1.234 extracted three (3) factors is successfully explained 71 per cent of the variance. Cronbach's Alpha coefficient of internal

consistency reported 0.929, which is considered high and above the threshold of 0.7 to 0.8 (Hair et al., 2010).

Table 4.7
Rotated component matrices for the performance expectancy construct (n=231)

Performance expectancy (PE) (17 items)	**Factor loading**	**Cronbach Alpha**	**KMO (BTOS)**	**Eigenvalue (% variance)**
		.929	.894 (.000)	1.234 (70.914%)
Perceived usefulness				
PE 3 Easy to do job	.878			
PE 4 Useful in job	.828			
PE 2 Increase productivity	.816			
PE 11 Increase effectiveness on the job	.780			
PE 9 Improves the quality of work	.766			
PE 10 Enhance effectiveness on job	.745			
PE 7 Assist on the job	.743			
PE 1 Improve job performance	.707			
PE 12 Less time on routine job tasks	.641			
PE 8 Accomplish tasks more quickly	.625			
Outcome expectations				
PE 16 Chances of promotion	.922			
PE 17 Chances of getting a raise	.920			
PE 15 Coworkers perceive as competent	.868			
PE 14 Increase quantity of output at same effort	.672			
PE 13 Increase quality of output	.565			
Job-fit				
PE 5 No effect on performance	.800			
PE 6 Decrease time for important job	-.651			

Effort expectancy that is originally tested with 12 items also managed to be retained with KMO measure of sampling adequacy of 0.915 (*i.e.* marvelous level) and BTOS is significant at significance level 0.000. The variance explained of 74.625 per cent is effectively clarified by two (2) factors, *i.e.* perceived ease of use and complexity. Factor one (1) comprises of eight (8) items with factor loading ranging from 0.632 to 0.895.

Factor two (2) comprises of four (4) items with factor loadings ranging from 0.785 to 0.841. The details of each factor are listed in Table 4.8. The eigenvalues recorded for effort expectancy is 1.817 with Cronbach's alpha 0.927.

Table 4.8
Rotated component matrices for the effort expectancy construct (n=231)

Effort expectancy (EE) (12 items)	**Factor loading**	**Cronbach Alpha**	**KMO (BTOS)**	**Eigenvalue (% variance)**
		.927	.915 (.000)	1.817 (74.625%)
Perceived ease of use				
EE 2 Find easy to do what want to do	.895			
EE 4 Flexible to interact with	.894			
EE 5 Easy to become skilful	.887			
EE 3 Interaction in clear and understandable	.872			
EE 6 Easy to use	.846			
EE 1 Easy to learn	.824			
EE 11 Believe easy to what need to do	.777			
EE 12 Overall is easy to use	.632			
Complexity				
EE 10 Too long to learn to make it worth the effort	.841			
EE 8 Complicated - difficult to understand what is going on	.810			
EE 7 Time taken from normal duties	.795			
EE 9 Time taken for mechanical operations (data input)	.785			

Social influence construct with three (3) items in each factors are categorized as image, subjective norm and social factors. The nine (9) items is retained without any deletion as the KMO measure of sampling adequacy is middling with 0.778 and BTOS value is significance (*i.e.* 0.000) represent the uncorrelated variables measured. Factor one (1) consists of factor loadings ranging from 0.869 to 0.954. Factor two (2) contains of factor loadings ranging from 0.797 to 0.900. Factor three (3) comprises of factor loadings

ranging from 0.727 to 0.859. The detail loading values for each item is as in Table 4.9. This construct is fit based on the principal components method with correlation matrix analysis and varimax rotation solution. The eigenvalues that is above 1.0 is able to report a variance explained value of 82 per cent. The Cronbach's alpha of 0.879 indicates an acceptable level of internal consistency to ensure the factors produce a reliable scale.

Table 4.9
Rotated component matrices for the social influence construct (n=231)

Social influence (SI) (9 items)	**Factor loading**	**Cronbach Alpha**	**KMO (BTOS)**	**Eigenvalue (% variance)**
		.879	.778 (.000)	1.052 (82.292%)
Image				
SI 8 User have a high profile	.954			
SI 9 Symbol of status	.908			
SI 7 User have more prestige	.869			
Subjective norm				
SI 2 Important observer think should use	.900			
SI 1 Influence observer think should use	.879			
SI 3 Influence of coworkers who use	.797			
Social factors				
SI 6 Organization very support	.859			
SI 5 Supervisor very supportive	.736			
SI 4 Senior management been helpful	.727			

The 12 items in facilitating conditions construct are remained and formed into three (3) factors accordingly to the factor loading as listed in Table 4.10, *i.e.* perceived behavioral control, facilitating conditions and compatibility. Each factor is loaded with more than 0.50 where factor one (1) comprises of four (4) items with factor loadings ranging from 0.771 to 0.914. Factor two (2) comprises of five (5) items with factor loadings ranging from 0.556 to 0.826. Factor three (3) comprises of two (2) items with loadings of 0.699

and 0.823. The KMO measure of sampling adequacy is above 0.80 and the BTOS is reported as significance (0.000). The eigenvalues greater than one (1), *i.e.* 1.288 extracted into three (3) factors is successfully explained 70 per cent of the variance. Cronbach's Alpha coefficient of internal consistency reported 0.806 that is considered high and above the threshold of 0.7 to 0.8 (Hair et al., 2010).

Table 4.10
Rotated component matrices for the facilitating condition construct (n=231)

Facilitating condition (FC) (11 items)	**Factor loading**	**Cronbach Alpha**	**KMO (BTOS)**	**Eigenvalue (% variance)**
		.806	.812 (.000)	1.288 (70.470%)
Perceived behavioral control				
FC 2 Have necessary resources	.914			
FC 3 Have necessary knowledge	.833			
FC 4 Easy to use with resources, opportunities and knowledge	.787			
FC 1 Have control over using the system	.771			
Facilitating conditions				
FC 9 Compatible with all aspects of work	.826			
FC 10 Fits well with the way to work	.813			
FC 8 Assistance is available (person or group)	.793			
FC 11 Fits into work style	.758			
FC 7 Specialized instruction available	.556			
Compatibility				
FC 5 Incompatible with other systems used	-.823			
FC 12 Trouble with other application	.699			

Perceived value that is originally tested with eight (8) items also managed to be retained with KMO measure of sampling adequacy of 0.857 and BTOS is significance at significance level 0.000. The variance explained of 70 per cent is effectively simplified into two (2) factors, *i.e.* attribute performance and product attribute. Factor one (1)

comprises of five (5) items with factor loading ranging from 0.680 to 0.805. Factor two (2) comprises of three (3) items with factor loadings ranging from 0.836 to 0.859. The details of each factor are listed in Table 4.11. The eigenvalues recorded for effort expectancy is above one (1) with Cronbach's alpha 0.866.

Table 4.11
Rotated component matrices for the perceived value construct (n=231)

Perceived value (PV) (8 items)	**Factor loading**	**Cronbach Alpha**	**KMO (BTOS)**	**Eigenvalue (% variance)**
		.866	.857 (.000)	1.264 (69.733%)
Attribute performance				
PV 2 Good decision considering time, price and effort	.805			
PV 1 Worth the cost	.799			
PV 3 Good value of money	.792			
PV 7 Overall quality is the best	.715			
PV 5 Good decision even without considering time, price and effort	.680			
Product attribute				
PV 6 Good decision considering effort	.859			
PV 4 Not good decision considering price	.841			
PV 8 Not good decision considering time	.836			

The 15 items in attitude variable is checked for its consistency and reliability. A cross-check with the entire threshold on anti-image, KMO measures and BTOS level is completed and three (3) items (*i.e.* Att 2, Att 10 and Att 14) are dropped. Concurrently, the revised anti-image correlation matrix indicated that the sampling adequacy for each variable is above the 0.50 threshold and achieved the overall fit. The KMO measure of sampling adequacy is meritorious with 0.872 and BTOS value is significance (*i.e.* 0.000) represent the uncorrelated variables measured. Factor one (1) consists of eight (8) items

with factor loadings ranging from 0.571 to 0.908. Factor two (2) contains of four (4) items with factor loadings ranging from 0.648 to 0.898. The detail loading values for each item as in Table 4.12. The revised constructs is fit based on the principal components method with correlation matrix analysis and varimax rotation solution. The eigenvalues that is 1.738 able to report a variance explained value of 72 per cent. The Cronbach's alpha of 0.928 indicates an acceptable level of internal consistency to ensure the factors produce a reliable scale.

Table 4.12
Rotated component matrices for the attitude construct (n=231)

Attitude (ATT) (12 items)	**Factor loading**	**Cronbach Alpha**	**KMO (BTOS)**	**Eigenvalue (% variance)**
		.928	.872 (.000)	1.738 (72.007%)
Affect toward use/Intrinsic motivation				
Att 9 Fun to work	.908			
Att 8 Make work more interesting	.902			
Att 7 Have fun	.889			
Att 5 Enjoyable	.868			
Att 6 The actual process is pleasant	.852			
Att 11 Like working with the system	.792			
Att 12 Look forward to aspects of job require to use the system	.703			
Att 4 Pleasant	.571			
Attitude toward behavior/Affect				
Att 1 Bad idea	.898			
Att 3 Dislike the idea	.884			
Att 13 Frustrating to use	.739			
Att 15 Get bored quickly	.648			

The revised behavioral intention construct finally derived at four (4) items that is categorized into one (1) factor. Out of the five (5), one (1) item (*i.e.* BI 3) is failed to fit with the factor analysis. The other four (4) items is retained without any amendment as

the KMO measure of sampling adequacy is middling with 0.727 and BTOS value is significance (*i.e.* 0.000) represent the uncorrelated variables measured. The one (1) factor consists of factor loadings ranging from 0.710 to 0.885. The detail loading values for each item as in Table 4.13. The revised constructs is fit based on the principal components method with correlation matrix analysis and varimax rotation solution. The eigenvalues that is above 1.0 (*i.e.* 2.730) able to report a variance explained value of 68.25 per cent. The Cronbach's alpha of 0.839 indicates an acceptable level of internal consistency to ensure the factors produce a reliable scale.

Table 4.13
Rotated component matrices for the behavioral intention construct (n=231)

Behavioral intention (BI) (4 items)	**Factor loading**	**Cronbach Alpha**	**KMO (BTOS)**	**Eigenvalue (% variance)**
		.839	.727 (.000)	2.730 (68.251%)
Behavioral intention				
BI 5 Not use even with access	.885			
BI 4 No intention to use next year	.858			
BI 1 Intend to use if had access	.841			
BI 2 Predict to use with the access	.710			

4.7 Factor Matrices for Moderating Variables

On the whole, the design characteristic is fit based on the principal components method with correlation matrix analysis and varimax rotation solution. The five (5) items of data matrix is suitable for factor analysis application as the matrices are larger than 0.30 (Hair et al., 2010). The KMO measure of sampling adequacy (*i.e.* 0.784) indicates the data are in middling and BTOS is significant with 0.000 significance level represent the variables

measured are uncorrelated. Obviously, the anti-image correlation matrix that indicated the sampling adequacy for the five (5) variables are above 0.50 threshold (Hair et al., 2010). The five (5) items in design characteristic's construct are remained and categorized into one (1) factor accordingly to the factor loading as listed in Table 4.14. The factor is loaded with more than 0.50 and comprises of five (5) items with factor loadings ranging from 0.684 to 0.898. The eigenvalues of 3.203 is greater than one (1), which successfully explained 64 per cent of the variance. Cronbach's Alpha coefficient of internal consistency reported 0.852 is considered high and above the threshold of 0.7 to 0.8 (Hair et al., 2010).

Table 4.14
Rotated component matrices for the design characteristic construct (n=231)

Design Characteristic (DC) (5 items)	**Factor loading**	**Cronbach Alpha**	**KMO (BTOS)**	**Eigenvalue (% variance)**
Design characteristic		.852	.784	3.203
Design 1 Clear and consistent	.898		(.000)	(64.065%)
Design 2 commands easy to understand	.892			
Design 3 Influence the acceptance	.758			
Design 4 Reduce the difficulty to understand	.748			
Design 5 Easy to learn	.684			

Incentive alignment that is originally tested with eight (8) items also managed to be retained with KMO measure of sampling adequacy of 0.859 (*i.e.* meritorious level) and BTOS is significance at significance level 0.000. The variance explained of 69 per cent is effectively explained in two (2) groups of factor, *i.e.* reward and performance. Factor one (1) comprises of six (6) items with factor loading ranging from 0.568 to 0.947. Factor two (2) comprises of two (2) items with factor loadings ranging from 0.616 to 0.754. The

details of each factor are listed in Table 4.15. The eigenvalues recorded for effort expectancy is 1.204 with Cronbach's alpha 0.847 and satisfied as above the threshold (Coakes & Ong, 2011; Hair et al., 2010).

Table 4.15
Rotated component matrices for the incentive alignment construct (n=231)

Incentive Alignment (IA) (8 items)	**Factor loading**	**Cronbach Alpha**	**KMO (BTOS)**	**Eigenvalue (% variance)**
		.847	.859 (.000)	1.204 (69.014%)
Reward				
Incentive 3 Like more if higher the reward	.947			
Incentive 4 Use if rewarded more often	.934			
Incentive 2 Use if reward is valuable	.933			
Incentive 1 Participate once rewarded	.898			
Incentive 7 Even if required time to understand and learn as reward align with task	.626			
Incentive 5 Less participation if more often with less valuable reward	.568			
Performance				
Incentive 6 Choose job performance with greater result	.754			
Incentive 8 Influence from other users even if unrewarded	.616			

User participation construct with two (2) factors are categorized as job specification and involvement. The 10 items is retained without any deletion as the KMO measure of sampling adequacy is meritorious with 0.876 and BTOS value is significance (*i.e.* 0.000) represent the uncorrelated variables measured. Factor one (1) consists of seven (7) items with factor loadings ranging from 0.706 to 0.901. Factor two (2) contains three (3) items with factor loadings ranging from 0.661 to 0.830. The detail loading values for each item as in Table 4.16. This construct is fit based on the principal components method with

correlation matrix analysis and varimax rotation solution. The eigenvalues that is above 1.0 able to report a variance explained value of 71 per cent. The Cronbach's alpha of 0.923 indicates an acceptable level of internal consistency to ensure the factors produce a reliable scale.

Table 4.16
Rotated component matrices for the user participation construct (n=231)

User Participation (UP) (10 items)		**Factor loading**	**Cronbach Alpha**	**KMO (BTOS)**	**Eigenvalue (% variance)**
			.923	.876 (.000)	1.173 (71.496%)
Job specification					
Participation 6	Reviewed system analyst work	.901			
Participation 10	Help formatting and create manual of e-filing system	.857			
Participation 7	Change in system agreement	.842			
Participation 8	Responsible in software selection	.809			
Participation 5	Approved requirement	.791			
Participation 9	Responsible on overall system success	.754			
Participation 4	Evaluate requirement	.706			
Involvement					
Participation 2	Involved in project development	.830			
Participation 1	Effective with user participation	.798			
Participation 3	Representative should involved	.661			

The revised training construct finally derived at six (6) items, which is categorized into two (2) factors, *i.e.* necessity and design. In the total of seven (7) items, one (1) item (*i.e.* Training 6) is failed to fit with the factor analysis. The other six (6) items is retained without any amendment as the KMO measure of sampling adequacy is middling with

0.713 and BTOS value is significance (*i.e.* 0.000) represent the uncorrelated variables measured. Factor one (1) consists of four (4) items with factor loadings ranging from 0.765 to 0.920. Factor two (2) comprises of two (2) items with loadings of 0.882 and 0.890. The detail loading values for each item as in Table 4.17. The revised constructs is fit based on principal components method with correlation matrix analysis and varimax rotation solution. The eigenvalues that is 1.483, able to report a variance explained value of 77 per cent. The Cronbach's alpha of 0.746 indicates an acceptable level of internal consistency to ensure the factors produce a reliable scale.

Table 4.17
Rotated component matrices for the training construct (n=231)

Training (T) (6 items)	**Factor loading**	**Cronbach Alpha**	**KMO (BTOS)**	**Eigenvalue (% variance)**
		.746	.713 (.000)	1.483 (76.790%)
Necessity				
Training 3 Essential to ensure effectiveness	.920			
Training 2 Appropriate in the implementation stage	.914			
Training 1 Appropriate in the early of the development stage	.845			
Training 4 Reduce time taken to learn and understand the system	.765			
Design				
Training 5 Design of training not important	.890			
Training 7 Frequent and continuous training not preferable	.882			

The 10 items in organization and peer supports variable is checked for its consistency and reliability. A cross-check with the entire threshold on anti-image, KMO measures and BTOS level is done and two (2) items are dropped (*i.e.* Support 6 and Support 8). Concurrently, the revised anti-image correlation matrix indicated that the sampling

adequacy for each variable is above the 0.50 threshold achieve the overall fit. The KMO measure of sampling adequacy is middling with 0.799 and BTOS value is significance (*i.e.* 0.000) represent the uncorrelated variables measured. Factor one (1), *i.e.* support group comprises of five (5) items with factor loadings ranging from 0.905 to 0.945. Factor two (2), *i.e.* compatibility contains three (3) items with factor loadings ranging from 0.745 to 0.936. The detail loading values for each item is as in Table 4.18. The revised constructs is fit based on the principal components method with correlation matrix analysis and varimax rotation solution. The eigenvalues that is 2.174, able to report a variance explained value of 83 per cent. The Cronbach's alpha of 0.838 indicates an acceptable level of internal consistency to ensure the factors produce a reliable scale.

Table 4.18
Rotated component matrices for the organization and peer supports construct (n=231)

Organization and Peer Supports (OPS) (8 items)	**Factor loading**	**Cronbach Alpha**	**KMO (BTOS)**	**Eigenvalue (% variance)**
		.838	.799 (.000)	2.174 (83.476%)
Support group				
Support 3 Co-worker helpful	.945			
Support 2 Peers supportive	.944			
Support 4 Top management support	.926			
Support 5 Supervisor support	.920			
Support 1 Friends support	.905			
Compatibility				
Support 10 Compatible with other software used	.936			
Support 9 Not compatible with other tools and technology	.932			
Support 7 Not sufficient access	.745			

4.8 Confirmation Factor Analysis (CFA): Measurement Model

The factor analysis is carried out until stage five (5), *i.e.* Label the Factors. The process of previous five (5) stages is analyzed on the reliable sample of 231 tax agents/preparers in Malaysia. The process of validating the purified sample for stage six (6) onwards is done on the same set of sample of 231 respondents.

4.8.1 Assessment of Fitness of a Measurement Model

A set of multiple-item reflective scales to measure each construct is proposed in this first stage: Defining individual constructs. Face validity appears evident the item wording match the conceptual definitions. In addition, a pretest was performed to match items with the construct names. Scales purification based on item-total correlations and factor analysis results from a pretest involving 231 tax agents/preparers or tax experts' resulted in the measurement shown in the previous tables (Tables 4.7 until 4.13, *i.e.* Rotated Component Matrices for All Constructs).

A visual diagram depicting the measurement model is shown in Figure 4.3. The model displays 26 items measured indicator variables and seven (7) latent constructs. All constructs are correlated to each other constructs and all measured items and errors are loaded to only one (1) construct and item respectively. Three (3) constructs are indicated by three (3) measured items, *i.e.* SI, FC and PV and one (1) constructs with four (4), five (5), six (6) and two (2) measured items (*i.e.* PE, ATT, EE and BI) respectively. Hence,

every individual construct is over identified, which means that overall model has more degrees of freedom than paths to be estimated. Therefore, this measurement model is consistent with the rule of thumb of moving at least three (3) indicators per construct except for BI that is permitted (Byrne, 2010a).

In designing a study with empirical results, the 714 respondents are randomly selected represents tax agents/preparers who engaged in tax e-filing on behalf of companies in Malaysia. Finally, 231 completed responses are obtained on the scale items described in Table 4.1. The overidentified measurement model is as expected based on pretest, which have communalities exceed 0.5 or 0.6 and it represent that the sample size is adequate. AMOS version 21 is chosen as an approach of analysis. The analysis, then begin with the graphical interface to draw the model depicted in Figure 4.3. Then, the measured variables are dragged into the model and run the software.

Once the measurement model is specified, with an assistance of SEM software, a solution is easily extracted. The default estimation procedure is the maximum likelihood as the sample size is sufficient and the distributional properties of the date are acceptable. The remaining options required for the analysis is choose accordingly. The initial portion of an output from the CFA results give a brief idea on the parameters to be estimated and the degrees of freedom. In this case, 73 parameters are estimated. Of the 73 free parameters, 19 are factor loadings, 28 represents factor variance and covariance terms, and 26 represents error variance terms. Hence, the total number of unique variance and

covariance terms is: (26 x 27) / 2 = 351. As 351 are greater than 73, the model is overidentified with 278 (351-73). Hence, the degree of freedom is more than the free parameters.

At this stage (*i.e.* assessing measurement model validity), the measurement theory is examined by comparing the results of the theoretical measurement model against reality. The overall fits is checked and selected fit indices from the CFA output are presented. The overall model x^2 is 624.448 with 278 degrees of freedom. The p-value associated with this result is 0.000. This p-value is significant using a type I error rate of 0.05. Thus, the x^2 goodness of fit statistic does not indicate that the observed covariance matrix matches the estimated covariance matrix within sampling variance. However, given the problems associated with analyzing this test alone and the effective sample size of 231, other fit statistics were closely examined. The rule of thumb is to rely on at least on indices from each category, *i.e.* absolute fit index and incremental fit index (Hair et al., 2010). The value for RMSEA, an absolute fit index is 0.074. This value appears quite low and is below the 0.08 guideline (Awang, 2012; Hair et al., 2010) for a model of seven (7) measured variables and a sample size of 231. With a 90 per cent confidence interval for RMSEA, it indicates that the true value of RMSEA is between 0.066 and 0.081. Thus, even the upper bound of RMSEA is still slightly high. RMSEA therefore, provides additional support for model fit. The other absolute fit statistic is the normed x^2, which is 2.246 (624.448 / 278 = 2.246). A number smaller than 2.0 is considered very good and

between 2.0 and 5.0 is acceptable (Hair et al., 2010). Thus, the normed x^2 suggest an acceptable fit for the CFA model. The incremental fit indices; the CFI is the most widely used and has a value of 0.932, which as the RMSEA exceeds the CFI guidelines of greater than 0.90. The other incremental fit indices such as TLI also exceed the suggested cutoff values, *i.e.* 0.920. Although this model is not compared to other models, the parsimony index of ratio has a value of 2.246, which is less than 5.0 reflects good model fit (Awang, 2012; Hair et al., 2010). The CFA results suggest the measurement model provides a reasonable good fit and thus, is suitable to proceed for further examination of the model results.

The issue of construct validity, *i.e.* convergent, discriminant and nomological validity is examined too. The requirement of unidimensionality, validity and reliability needs to be addressed prior to modeling the structural model once the CFA procedure for every measurement model is completed (Awang, 2012; Hair et al., 2010).

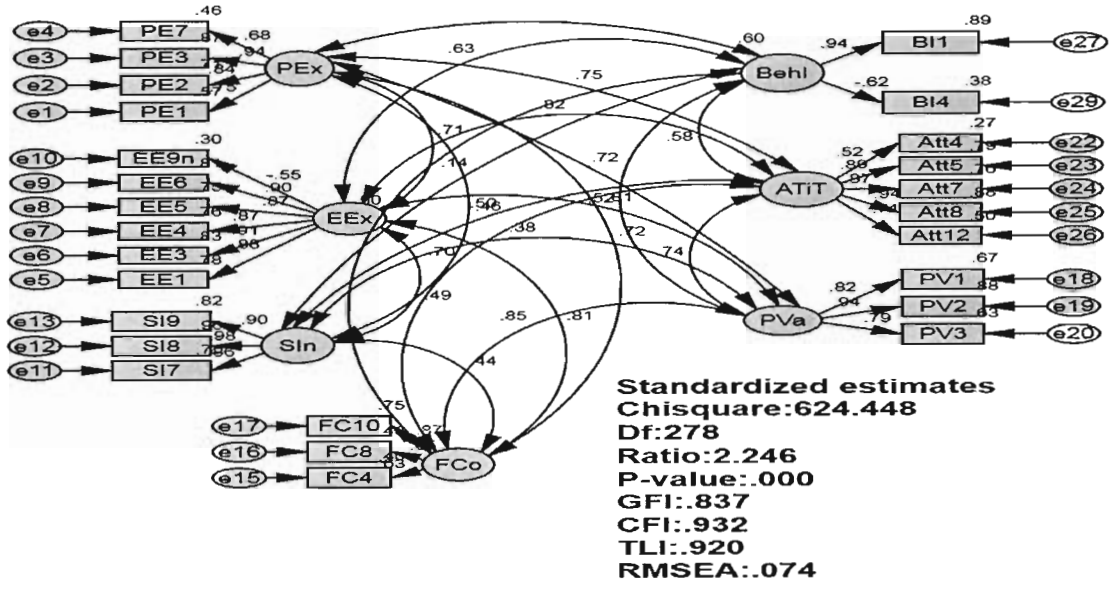

Figure 4.3
Measurement model for behavioral intention constructs

4.8.2 Assessment of Validity and Reliability of Measurement Model

Construct validity is examined via convergent, discriminant and nomological validity. The magnitude, direction and statistical significance of maximum likelihood factor loading estimates are considered in the validity evaluation. For instance, the standardized loadings are required to calculate discriminant validity and reliability estimates. The construct validity is achieved as the individual standardized factor loading (*i.e.* regression weight) is within the range of 0.5 to 0.7 for all the constructs as in Table 4.19. Even though behavioral intention construct left with two (2) items to explain, the construct is still supporting the content validity (Byrne, 2010a; Hair et al., 2010). This is because as

whole, the model is overidentified with minimum of three (3) items on the other six (6) constructs (Byrne, 2010a). It is the suggested number of items with a minimum of three (3) and preferable of four (4) (Hair et al., 2010), however, taking into account the whole model any construct with two (2) measurement items is acceptable (Awang, 2012; Byrne, 2010a).

Moreover, variance extracted measures are satisfied for all seven (7) constructs where the reported average variance extracted (AVE) is 0.5 and above. The constructs are performance expectancy, effort expectancy, social influence, facilitating conditions, perceived value, attitude and behavioral intention with the AVE values of 0.652, 0.846, 0.840, 0.527, 0.728, 0.640 and 0.640 respectively. In fact, all the constructs are also considered achieved the construct reliability. This is because the constructs are above the minimum threshold of 0.6 (Awang, 2012). The construct reliabilities range from 0.766 for the facilitating conditions construct to 0.993 for the effort expectancy construct. Indeed, the supported evidence on construct reliability suggesting adequate reliability.

Overall, the evidence supports the convergent validity of the measurement model. All loading estimates are above 0.5 (Hair et al., 2010), which indicates and ensures model fit or internal consistency. The AVE estimates also considered all as satisfactory and the same acceptance applied in the reliability estimates. In addition, the model fits relatively well. Therefore, all the items are retained at this point and adequate evidence of convergent validity is provided (details in Appendix 4A).

Table 4.19
The confirmatory factor analysis report summary for all construct (n=231)

Construct	Item	Factor Loading	CA (> 0.7)	CR (> 0.6)	AVE (> 0.5)
PE	PE 1	.753	**.874**	**.830**	**.652**
	PE 2	.840			
	PE 3	.935			
	PE 7	.679			
EE	EE 1	.885	**.918**	**.933**	**.705**
	EE 3	.910			
	EE 4	.869			
	EE 5	.866			
	EE 6	.901			
	EE 9	-.547			
SI	SI 7	.864	**.937**	**.812**	**.840**
	SI 8	.978			
	SI 9	.903			
FC	FC 4	.634	**.729**	**.766**	**.527**
	FC 8	.653			
	FC 10	.867			
PV	PV 1	.818	**.818**	**.889**	**.728**
	PV 2	.941			
	PV 3	.793			
ATT	ATT 4	.516	**.886**	**.808**	**.640**
	ATT 5	.890			
	ATT 7	.872			
	ATT 8	.937			
	ATT 12	.707			
BI	BI 1	.948	**.712**	**.773**	**.640**
	BI4	-.617			

4.8.3 Assessment of Discriminant Validity for Latent Exogenous

The conservative approach for establishing discriminant validity is to compare the squared AVE estimates for each factor with the squared interconstruct correlations associated with that factor. As detailed out in Table 4.20, it represents that all squared root of AVE estimates are greater than the corresponding interconstruct correlation estimates that are above the diagonal. This test indicates that there are no problems with

discriminant validity for the CFA model. However, perceived value does have a problem of correlation with facilitating condition as the interconstructs' squared correlation estimates are greater than the AVE estimates, *i.e.* 0.845 vs 0.726.

The congeneric measurement model supports discriminant validity because it does not contain any cross-loadings among either the measured variables or the error terms. This congeneric measurement model provides a good fit and shows no evidence of substantial cross-loadings. Even though the discriminant validity index for perceived value is slightly higher than facilitating condition construct, but it indicates no cross-loading. The index is slightly below the threshold of 0.85, which indicated a cross-loading problem (Awang, 2012). Taken as a whole, the discriminant validity is supported in the measurement model.

Table 4.20
The discriminant validity index summary (n=231)

Construct	PE	EE	SI	FC	PV	ATT	BI
PE	**.807**						
EE	.705	**.840**					
SI	.460	.485	**.917**				
FC	.724	.808	.438	**.726**			
PV	.724	.806	.382	.845	**.853**		
ATT	.751	.824	.500	.702	.740	**.800**	
BI	.595	.634	.142	.497	.522	.583	**.800**

4.8.4 Assessment of Fitness of Moderating Constructs

A set of multiple-item reflective scales to measure each construct is proposed in this stage, *i.e.* defining individual constructs for moderating variables. Face validity appears

evident the item wording match the conceptual definitions. In addition, a pretest was performed to match items with the construct names. Scales purification based on item-total correlations and factor analysis results from a pretest involving 231 tax agents/preparers or tax experts' resulted in the measurement shown in Tables 4.14 until 4.18, *i.e.* Rotated Component Matrices for All Moderating Constructs.

In developing the overall measurement model, a visual diagram depicting the measurement model is shown in Figure 4.4. The model displays 18 measured indicator variables. All constructs are correlated to each other constructs and all measured items and errors are loaded to only one (1) construct and item respectively. Three (3) constructs are indicated by three (3) measured items, *i.e.* design, training and support, one (1) construct is indicated by four (4) measured items (incentive) and another one (1) construct is indicated by five (5) measured items that is participation. Hence, every individual construct is over identified means that overall model has more degrees of freedom than paths to be estimated. Therefore, this measurement model is consistent with the rule of thumb of moving at least three (3) indicators per construct (Hair et al., 2010).

The 714 randomly selected represent tax agents/preparers who engaged in tax e-filing on behalf of companies in Malaysia. Total of 231 completed responses were obtained on the scale items described in Table 4.1. The overidentified measurement model is as expected based on pretest that have communalities exceed 0.5 or 0.6 and it represents that the sample size is adequate. AMOS version 21 is chosen as an approach of analysis. The

analysis, then begin with the graphical interface to draw the model depicted in Figure 4.4. Then, the measured variables are dragged into the model and run the software. Once the measurement model is specified, with an assistance of SEM software, a solution is easily extracted. The default estimation procedure is maximum likelihood as the sample size is sufficient and the distributional properties of the date are acceptable. The remaining options required for the analysis is choose accordingly. The initial portion of an output from the CFA results give a brief idea on the parameters to be estimated and the degrees of freedom. In this case, 46 parameters are estimated. Of the 46 free parameters, 13 are factor loadings, 15 represents factor variance and covariance terms, and 18 represents error variance terms. Hence, the total number of unique variance and covariance terms is: (18 x 19) / 2 = 171. As 171 are greater than 46, the model is overidentified with 125. It includes more degrees of freedom than free parameters.

At this stage, the measurement theory is examined by comparing the results of the theoretical measurement model against reality. The overall fits is checked and selected fit indices from the CFA output are presented. The overall model x^2 is 290.207 with 125 degrees of freedom. The p-value associated with this result is 0.0001. This p-value is significant using a type I error rate of 0.05. Thus, the x^2 goodness of fit statistic does not indicate that the observed covariance matrix matches the estimated covariance matrix within sampling variance. However, given the problems associated with analyzing this test alone and the effective sample size of 231, other fit statistics were closely examined.

The rule of thumb is to rely on at least on indices from each category, *i.e.* absolute fit index and incremental fit index. The value for RMSEA, an absolute fit index is 0.076. This value appears quite low and is below the 0.08 guideline (Hair et al., 2010) for a model of five (5) measured variables and a sample size of 231. With a 90 per cent confidence interval for RMSEA, it indicates that the true value of RMSEA is between 0.064 and 0.087. Thus, even the upper bound of RMSEA slightly over 0.08, but is still considered low. RMSEA therefore, provides additional support for model fit. The other absolute fit statistic is the normed x^2, which is 2.322 (290.207 / 125 = 2.322). A number smaller than 2.0 is considered very good and between 2.0 and 5.0 is acceptable (Hair et al., 2010). Thus, the normed x^2 suggest an acceptable fit for the CFA model. The incremental fit indices; the CFI is the most widely used and has a value of 0.956, which as the RMSEA exceeds the CFI guidelines of greater than 0.90. The other incremental fit indices such as NFI, RFI and TLI also exceed the suggested cutoff values, *i.e.* 0.926, 0.909 and 0.946 respectively. Although this model is not compared to other models, the parsimony index of ratio has a value of 2.322, which reflects good model fit as it is below the threshold of 5.0 (Hair et al., 2010). The CFA results suggest the measurement model provides a reasonable good fit and thus, is suitable to proceed to further examination of the model results.

The issue of construct validity, *i.e.* convergent, discriminant and nomological validity is examined too. The requirement of unidimensionality, validity and reliability needs to be

addressed prior to modeling the structural model once the CFA procedure for every measurement model is completed (Awang, 2012; Hair et al., 2010).

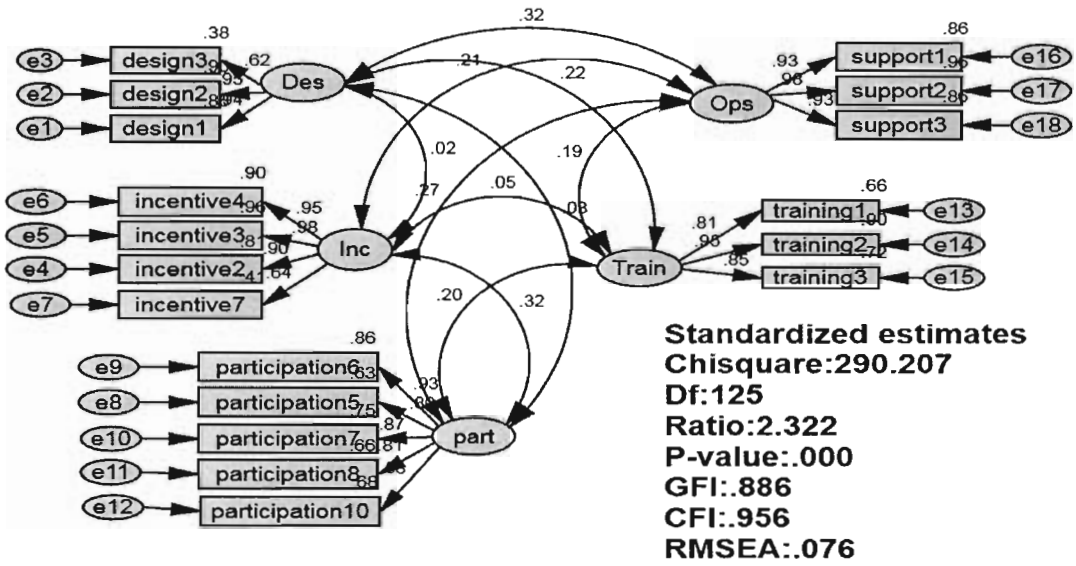

Figure 4.4
Measurement model of moderating variables

4.8.5 Assessment of Validity and Reliability of Moderating Constructs

The magnitude, direction and statistical significance of maximum likelihood factor loading estimates are considered in the validity evaluation. For instance, the standardized loadings are required to calculate discriminant validity and reliability estimates. Table 4.21 displays standardized loadings (standardized regression weights using AMOS terminology). The construct validity is achieved as the individual standardized factor loadings are in the range of 0.5 to 0.7. The lowest loading obtained is 0.616, linking

design to item design 3. Whilst the highest loading achieved is 0.981, connecting support to item support 2.

The average variance extracted (AVE) measures are satisfied for all five (5) constructs where the reported AVE are 0.5 and above. The AVE estimates range from 71.8 per cent for participation to 89.4 per cent for support. All exceed the 50-per cent rule of thumb (Hair et al., 2010). Construct reliabilities range from 0.780 for the design construct to 0.945 for the support construct. This test also indicates the construct reliability is supported and exceed the cutoff of 0.7 (Hair et al., 2010) suggesting adequate reliability.

On the whole, the evidence supports the convergent validity of the measurement model. All loading estimates are above the threshold of 0.5 (Hair et al., 2010), hence, does not appear to significantly harming model fit or internal consistency. The AVE estimates as well as the reliability estimates are also considered satisfied. In addition, the model fits relatively well. Therefore, all the items are retained at this point and adequate evidence of convergent validity is provided (details is Appendix 4B).

Table 4.21
The confirmatory factor analysis report summary for all moderating construct (n=231)

Construct	Item	Factor Loading	CA (> 0.7)	CR (> 0.6)	AVE (> 0.5)
Design	Des 1	.940	**.864**	**.780**	**.719**
	Des 2	.946			
	Des 3	.616			
Incentive	Inc 2	.898	**.923**	**.806**	**.768**
	Inc 3	.979			
	Inc 4	.950			
	Inc 7	.637			

Table 4.21 (Continued)

Construct	Item	Factor Loading	CA (> 0.7)	CR (> 0.6)	AVE (> 0.5)
Participation	Part 5	.796	**.925**	**.828**	**.718**
	Part 6	.929			
	Part 7	.866			
	Part 8	.814			
	Part 10	.826			
Training	Train 1	.810	**.899**	**.876**	**.756**
	Train 2	.947			
	Train 3	.846			
Support	Supp 1	.929	**.961**	**.945**	**.894**
	Supp 2	.981			
	Supp 3	.925			

4.8.6 Assessment of Discriminant Validity for Latent

The discriminant validity is computed by comparing the AVE estimates for each factor with the squared interconstruct correlations associated with that factor. As listed in Table 4.22, the AVE estimates are greater than the corresponding interconstruct squared correlation estimates which in bold and are above the diagonal. Hence, it indicates that there are no problems with discriminant validity for the CFA model.

In respect to the moderating constructs, the congeneric measurement model supports discriminant validity because it does not contain any cross-loadings among either the measured variables or the error terms. This congeneric measurement model provides a good fit and shows no evidence of substantial cross-loadings. In overall, the discriminant validity is supported in the moderating measurement model.

Table 4.22
The discriminant validity index summary for moderating (n=231)

Construct	Design	Incentive	Participation	Training	Support
Design	**.848**				
Incentive	.020	**.876**			
Participation	.025	.315	**.847**		
Training	.224	.050	.195	**.869**	
Support	.319	.213	.275	.185	**.946**

4.9 Structural Equation Modelling (SEM)

The CFA illustration in previous section is based on testing a measurement theory. The end result then is validated on a construct indicator to study on the relationships among the seven (7) important constructs, *i.e.* performance expectancy, effort expectancy, social influence, facilitating conditions, perceived value, attitude and behavioral intention. The full measurement model is tested previously and is shown to have an adequate fit and construct validity. The CFA fit statistics for the measurement model were: $x^2 = 624.448$ with 278 degrees of freedom (.000); CFI = 0.932; TLI = 0.920; and RMSEA = 0.074. The following section is based on the structural model using SEM.

4.9.1 Structural Model Analysis for Behavioral Intention Constructs

Structural model analysis is performed with the establishment of the structural relationships among the constructs and translated into a form suitable for SEM analysis as in Figure 4.5. The relationships created on the basis model are based on the structural theory underlying the analysis and the path diagram for estimation purposes. In this study, the theory is based on the literatures of Unified Theory of Acceptance and Use of

Technology (UTAUT) as well as Technology Acceptance Model 3 (TAM3). Thus, the study is conducted with the seven (7) constructs listed in Figure 4.5.

The theory predicted that performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC) and perceived value (PV) are all related to behavioral intention (BI) in a direct relationship. Hence, the following hypotheses are tested in the structural model analysis:

H_1: *Performance expectancy has a positive influence on behavioral intention to accept tax e-filing in Malaysia.*

H_2: *Effort expectancy has a positive influence on behavioral intention to accept tax e-filing in Malaysia.*

H_3: *Social influence has a positive influence on behavioral intention to accept tax e-filing in Malaysia.*

H_4: *Facilitating conditions has a positive influence on behavioral intention to accept tax e-filing in Malaysia.*

H_5: *Perceived value has a positive influence on behavioral intention to accept tax e-filing in Malaysia.*

Visually, the theory or relationships is expressed as in Figure 4.5. The figure represents the complete measured indicator variables and the corresponding paths and errors. Thus, the parameters related on the basis model to test the hypotheses are as the following:

Table 4.23
The summary of structural model hypothesis and parameter for Figure 4.5

Hypothesis	Parameter
H_1: PEx + → BehI	$P_{BI,PE}$
H_2: EEx + → BehI	$P_{BI,EE}$
H_3: SIn + → BehI	$P_{BI,SI}$
H_4: FCo + → BehI	$P_{BI,FC}$
H_5: PVa + → BehI	$P_{BI,PV}$
Attit + → BehI	$P_{BI,Att}$

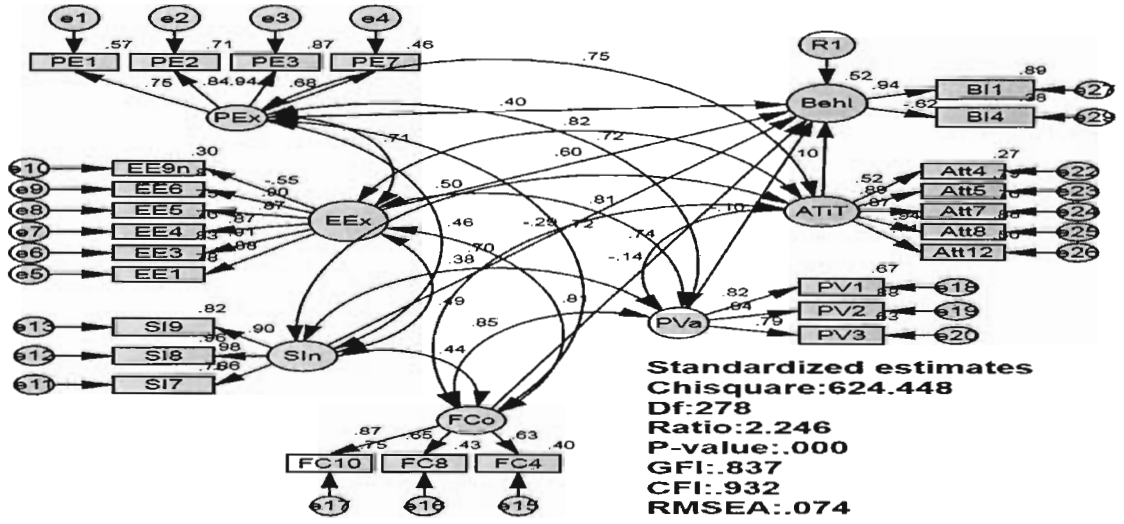

Figure 4.5
Structural model of behavioral intention constructs (basis model)

In the above basis model, PE, EE, SI, FC, PV and attitude are exogenous constructs that are consider to be determined by things outside of the model. In practical terms, this means that no hypothesis predicts either of these constructs and used only to predict other constructs. As shown in the Figure 4.5, no single-headed arrows enter the exogenous constructs. A curved two-headed arrow on the other hand, is illustrated to capture the covariance between two constructs, *i.e.* Cov $_{EE,PE}$; Cov $_{SI,PV}$; and many more. Although there is no hypothesis between the two (2) covariance relationship, there is no reason to

suspect that both having an independent constructs relationship. Hence, any path coefficients that are measured in the measurement model even with no hypothesis related, the parameter need to be estimated in the SEM model (Hair et al., 2010).

Relatively, behavioral intention (*i.e.* BehI) in the model is an endogenous construct. It is determined by constructs included in the model and contributes as an outcome based on the hypotheses. The CFA model that transformed into a structural model is then redefine into exogenous and endogenous constructs. The correlation paths are replaced with the structural relationships and notation associated are changed accordingly for further analysis and model validity.

The structural model as in Figure 4.5 is the basis model of the behavioral intention. As the model is overidentified model, few screening, modification and identification has been made. Indeed, the basis model produce the best model with the same parameter as discussed in Table 4.24 for this study as illustrated in Figure 4.6.

Table 4.24
The summary of structural model hypothesis and parameter for Figure 4.6

Hypothesis	Parameter
H_1: PEx + → BehI	$P_{BI,PE}$
H_2: EEx + → BehI	$P_{BI,EE}$
H_3: SIn + → BehI	$P_{BI,SI}$
H_4: FCo + → BehI	$P_{BI,FC}$
H_5: PVa + → BehI	$P_{BI,PV}$

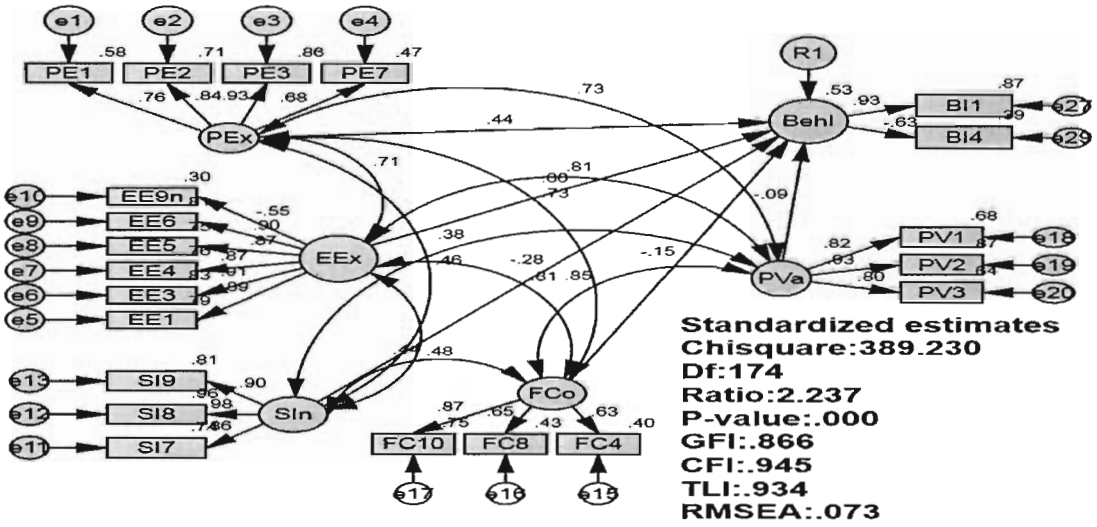

Figure 4.6
Structural model of behavioral intention constructs (best model)

4.9.2 Analyzing the Correlation and Causal Relationships

The structural model as in Figure 4.5 and Figure 4.6 is estimated and assessed. This is to derive at SEM model fit and checked on its consistency of structural relationships with theoretical expectations. The information in Table 4.24 reflects the overall fit statistics on structural model (basis model) compared to its measurement model. The x^2 is 624.448 with 278 degrees of freedom ($p < 0.000$) and the normed chi-square is 2.246. The model CFI is 0.932, TLI is 0.920 with a RMSEA of 0.074 and 90 per cent confidence interval of

0.066 to 0.081. All of the measures are within a range that is associated with good fit. These diagnostics suggest the model provides a good overall fit (refer Appendix 5A).

As determined before, this structural model is overidentified model. Thus, several models is developed and improved in order to produce the best model for the study as in Figure 2.6. The improved model indicates that the x^2 is 389.230 with 174 degrees of freedom ($p < 0.000$) and the normed chi-square is 2.237. The model CFI is 0.945, TLI is 0.934 with a RMSEA of 0.073 and 90 per cent confidence interval of 0.064 to 0.083. The model's NFI and IFI values calculated are 0.906 and 0.946 respectively. All of the measures are within the range that is associated with good fit. Thus, the diagnostics suggest the best model provides a good overall fit (refer Appendix 5B).

As a whole, the model fit which is based on basis model has no change from the CFA model. The basic model is used to compare between CFA and SEM models in determining the fitness of the model that is transform from measurement to structural model. There are no differences in any model fit includes a chi-square or degrees of freedom. The standardized path coefficients are shown in Figure 4.5.

Table 4.25
Comparison of GOF measured between SEM and CFA models

GOF Index	SEM Model	CFA Model
Absolute Measures		
χ^2 (Chi-square)	624.448	624.448
Degrees of freedom	278	278
Probability	0.000	0.000
GFI	.837	.837
RMSEA	.074	.074
Confidence interval of RMSEA	.066 - .081	.066 - .081
RMR	.118	.118
Normed chi-square	2.246	2.246
Incremental Fit Measures		
NFI	.885	.885
TLI	.920	.920
CFI	.932	.932
RFI	.865	.865
Parsimony Measures		
AGFI	.794	.794
PNFI	.757	.75
Ratio	2.246	2.246

The path coefficients and loadings estimates are as in Table 4.26. The loadings estimates are virtually unchanged from the CFA results. Thus, there is evidence of parameter stability among the measured indicator variables. Hence, it indicates of no problem on interpretational confounding and supports the measurement model's validity. Indeed, with no change in loadings, the construct reliabilities are identical as well.

Table 4.26
Comparison of standardized factor loadings and construct reliabilities for SEM and CFA models

Indicator	Constructs	SEM Model	CFA Model
		Standardized Factor Loading	
PE 1	PEx	.753	.753
PE 2	PEx	.840	.840
PE 3	PEx	.935	.935
PE 7	PEx	.679	.679
EE 1	EEx	.885	.885
EE 3	EEx	.910	.910
EE 4	EEx	.869	.869
EE 5	EEx	.866	.866
EE 6	EEx	.901	.901
EE 9	EEx	-.547	-.547
SI 7	SIn	.864	.864
SI 8	SIn	.978	.978
SI 9	SIn	.903	.903
FC 4	FCo	.634	.634
FC 8	FCo	.653	.653
FC 10	FCo	.867	.867
PV 1	PVa	.818	.818
PV 2	PVa	.941	.941
PV 3	PVa	.793	.793
Att 4	ATiT	.516	.516
Att 5	ATiT	.890	.890
Att 7	ATiT	.872	.872
Att 8	ATiT	.937	.937
Att 12	ATiT	.707	.707
BI 1	BehI	.994	.994
BI 4	BehI	-.619	-.619
		Construct Reliabilities	
	PEx	.830	.830
	EEx	.933	.933
	SIn	.812	.812
	FCo	.766	766
	PVa	.886	.886
	ATiT	.808	.808
	BehI	.773	.773

Validation of the model also focuses on the individual parameter estimates in order to determine the statistically significant. Table 4.27 contains the standardized parameter

estimates for all of the structural relationships as well as correlational relationship among attitude (*i.e.* ATiT) and behavioral intention (*i.e.* BehI) that is based on the basis model. As noted in Table 4.27, three (3) out of the six (6) relationships are supported with significant path estimates ($p < 0.000$). The constructs are performance expectancy, effort expectancy and social influence with regression weight estimate of 0.46, 0.60 and negative 0.18 respectively. The respective standard errors are 0.123, 0.142 and 0.042. Indeed, the regression weight estimate of performance expectancy and effort expectancy are 3.746 and 4.210 standard errors above zero (0) respectively. As for the social influence the z value shows that the regression weight estimate 4.332 standard errors below zero (0). Whereas, the other two (2) hypothesized relationships, *i.e.* facilitating condition and perceived value in the prediction behavioral intention is not significantly different from zero (0) at the 0.05 level (two-tailed). This is inclusive of the possible structural relationship that is not hypothesized, *i.e.* attitude and behavioral intention. Hence, this would suggest that model improvement or respecification is possible with the addition or exclusion of the one (1) relationship.

Table 4.27
Hypothesis testing result of behavioral intention (basis model)

Hypothesis	Relationship	Estimate	Critical Ratio	P-value	Result
H_1:	PEx + → BehI	.459	3.746	***	Supported
H_2:	EEx + → BehI	.598	4.210	***	Supported
H_3:	SIn + → BehI	-.184	-4.332	***	Supported
H_4:	FCo + → BehI	-.266	-0.867	.386	Not supported
H_5:	PVa + → BehI	-.090	-0.690	.490	Not supported
	ATiT+ → BehI	.155	.828	.408	-

*Notes: *** $p<0.000$*

In the case of not supported hypothesis as well as on not hypothesized relationships, several diagnostic measures are available to evaluate SEM model. The diagnostic includes revisit on fit indices to standardized residuals and modification indices. Indeed, it determines whether model respecification should be considered or otherwise.

In this research of overidentified model, the structural model is improved by taking out the construct of attitude from the basis structural model. In fact, in terms of standardized regression weight, attitude construct is eliminated. This is due to very low weight of standardized regression of attitude on behavioral intention, *i.e.* 0.155. In addition to that, the correlation value of attitude with other constructs, *i.e.* performance expectancy, effort expectancy, social influence, facilitating conditions and perceived values are in the range of 0.500 to 0.824 (refer Appendix 5A). Besides the position of this construct that is not hypothesis and highly is explained by other constructs, it is a good candidate to be eliminated. The purpose of the construct is mainly to test its robustness on performance expectancy and effort expectancy and it is achieved. It simply means that attitude is taken care very well by the performance and effort expectancy constructs and supported in the literatures. Furthermore, the model fitness also slightly improved as the attitude construct is taken out from the structural model. The improved standardized estimates of RMSEA is 0.073; CFI of 0.945, TLI of 0.934, Ratio of 2.237 at significance level of 0.000 with degrees of freedom 174. The testing result on the best model is as indicated in Table 4.28 below.

Table 4.28
Hypothesis testing result of behavioral intention (best model)

Hypothesis	Relationship	Estimate	Critical Ratio	P-value	Result
H_1:	PEx + → BehI	.491	4.332	***	Supported
H_2:	EEx + → BehI	.651	5.397	***	Supported
H_3:	SIn + → BehI	-.178	-4.233	***	Supported
H_4:	FCo + → BehI	-.283	-0.926	.354	Not supported
H_5:	PVa + → BehI	-.080	-0.610	.542	Not supported

*Notes: *** $p<0.000$*

The hypothesis testing on the best model revealed few expected results, which supported the hypothesis developed in the study. However, another two (2) hypotheses are not supported. On the whole, there are positive relationships between performance expectancy and effort expectancy toward behavioral intention as reported in Table 4.28. Indeed, there is a solid ground to support hypotheses one (H_1) and two (H_2) where the estimate values are 0.491 and 0.651 with critical ratio of 4.332 and 5.397 respectively where both are significant at level $p < 0.000$. As for social influence, the result reported a partial support on the hypothesis three (H_3) where there is a significance ($p<0.000$) negative relationship toward behavioral intention. The estimated value is -0.178 with 4.233 standard errors below zero (0). The overall result on squared multiple correlations, *i.e.* R^2 of behavioral intention that successfully explained by the constructs is 0.526. Hence, it shows that 52.6 per cent of the behavioral intention is explained by performance expectancy, effort expectancy, social influence, facilitating condition as well as perceived value constructs.

The other two (2) constructs which not supported the hypothesis are facilitating condition and perceived value. Both construct have the highest correlation between them in the model which is 0.847. If the covariance is above 0.085 that could create multicollinearity or confounding problems (Awang, 2012; Hair et al., 2010), either one (1) of the constructs could be eliminated (*i.e.* between construct covariance). In the case of facilitating condition, it seems that having no problem with other constructs in terms of covariance which the range is between 0.401 and 0.590. The consideration of perceived value is focus on its covariance with effort expectancy that is estimated as high as 1.058. In addition, facilitating condition and perceived value constructs estimated low weight of -0.283 and -0.080 respectively, which means both are having reverse effect on behavioral intention (refer Appendix 5B).

In consideration of several possible alternatives in improving the structural model, thus, there is a need for model respecification. Finally, the structural model retained the construct of perceived value with the other four (4) constructs, *i.e.* performance expectancy, effort expectancy, social influence and facilitating condition. This is mainly taking into account the effect of interaction that could possibly change the direction of the constructs. The standardized estimates for the respecification model as in the attachment reported RMSEA at 0.073, CFI at 0.945, TLI at 0.934 with degrees of freedom at 174, Chi-square is 389.230 and ratio of 2.237 at $p<0.000$.

4.9.3 Structural Model Analysis for Moderation Variables

Volume of transaction effect on direct relationship is checked via bootstrapping method. This is due to its characteristic which is non metric construct. The following hypotheses are estimated via bootstrapping (Byrne, 2010b).

H_{1a}: *The influence of performance expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by volume of transaction.*

H_{2a}: *The influence of effort expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by volume of transaction.*

H_{4a}: *The influence of facilitating conditions on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by volume of transaction.*

Visually, the interaction effect path is illustrated as in Figure 4.7. The figure diagrammed the interaction effect of volume on the five (5) constructs, *i.e.* performance expectancy, effort expectancy, social influence, facilitating conditions and perceived value towards behavioral intention. In summary the parameters related to test the hypotheses for performance expectancy are as the following:

Table 4.29
The summary of structural model hypothesis and parameter for Figure 4.7

Hypothesis	Parameter
H_{1a}: PE *volume → BI	$P_{BI,PE*volume}$
H_{2a}: EE *volume → BI	$P_{BI,EE*volume}$
SI *volume → BI	$P_{BI,SI*volume}$
H_{4a}: FC *volume → BI	$P_{BI,FC*volume}$
PV *volume → BI	$P_{BI,PV*volume}$

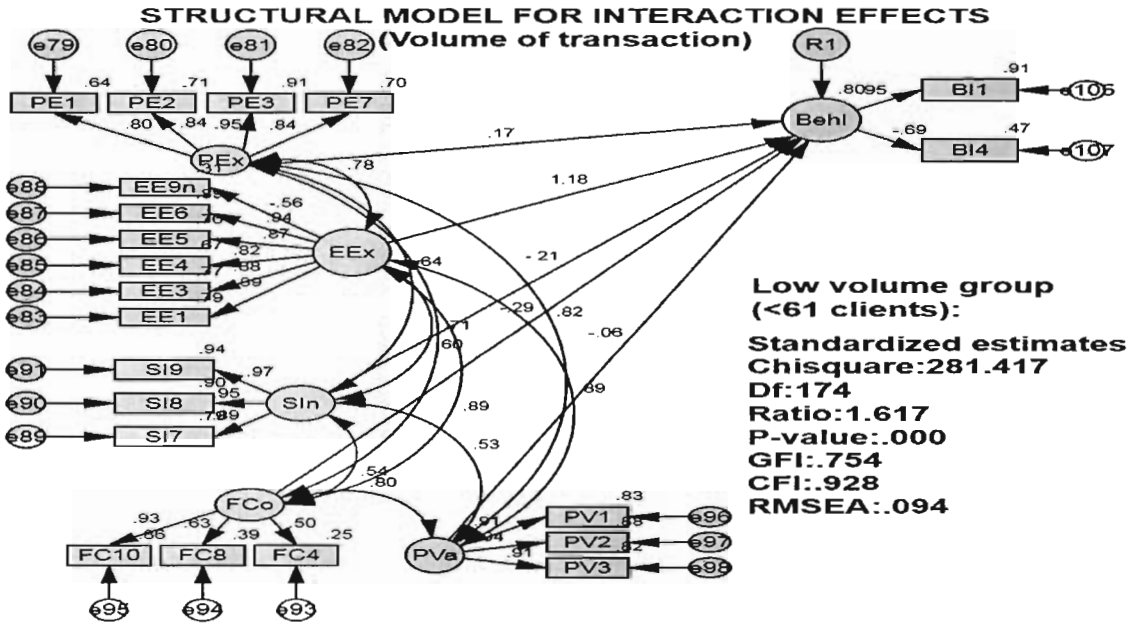

Figure 4.7
Structural model of interaction effect (volume of transaction)

Referring to Figure 4.7, the performance expectancy (PEx), effort expectancy (EEx), social influence (SIn), facilitating condition (FCo) and perceived value (PVa) are the hypothesized construct to have relationship with behavioral intention (BehI). This direct relationship is further analyzed to determine the significance level of volume of transaction as moderator. As to achieve the purpose of level of volume that significantly

affect the behavioral intention, the data is divided into two (2) groups, *i.e.* low and high volume group. Therefore, new paths are created to represent the interaction effects on the direct relationship, *i.e.* PE*volume, EE*volume, SI*volume, FC*volume as well as PV*volume for each group (Table 4.29).

The analysis of the other five (5) moderating variables revealed few interesting findings. In spite of almost weakening the power of explained (R^2 = .526) of the direct relationship on the constructs toward behavioral intention, few not hypothesized relationships also are pointed out. The interaction effect as suggested by Ping (1995) is technically applied in gathered answers for the following 16 hypotheses in respect to five (5) moderators effects as listed below:

(i) Design characteristics:

H_{1b}: The influence of performance expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by design characteristics.

H_{2b}: The influence of effort expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by design characteristics.

H_{5b}: The influence of perceived value on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by design characteristics.

(ii) User participation:

H_{1c}: *The influence of performance expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by user participation.*

H_{3c}: *The influence of social influence on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by user participation.*

(iii) Incentive alignment:

H_{1d}: *The influence of performance expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by incentive alignment.*

H_{2d}: *The influence of effort expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by incentive alignment.*

H_{3d}: *The influence of social influence on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by incentive alignment.*

H_{5d}: *The influence of perceived value on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by incentive alignment.*

(iv) Training:

H_{1e}: *The influence of performance expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by training.*

H_{2e}: *The influence of effort expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by training.*

(v) Organizational and peer supports:

H_{1f}: The influence of performance expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by organizational and peer supports.

H_{2f}: The influence of effort expectancy on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by organizational and peer supports.

H_{3f}: The influence of social influence on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by organizational and peer supports.

H_{4f}: The influence of facilitating conditions on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by organizational and peer supports.

H_{5f}: The influence of perceived value on behavioral intention toward tax e-filing among tax agents/preparers will be moderated by organizational and peer supports.

In determining the significance of each relationship with the interaction effect, significance effect at 95 per cent ($p < 0.05$) is taken into consideration. Despite the characteristic of the moderator itself that is considered new and yet to be approved as stable construct, more stringent alpha is decided. Even though the power could be increase by choosing a less stringent alpha level (e.g. 0.10 instead of 0.05). This is merely

due to unfavorable significance level of 0.10 that could lead to wrong decision making (Hair et al., 2010). As presented in the following tables, *i.e.* Table 4.32 to 4.36, out of the 16 hypotheses of interaction effect on behavioral intention's constructs, 12 hypotheses are proved to be not having any significance effects. Surprisingly, the effect of incentive as well as organizational and peer supports are totally none, *i.e.* not play any roles in determining the behavioral intention of tax agents/preparers in Malaysia. Whereas, the other effects, *i.e.* design characteristics, training and user participation seems to have some contribution in the relationship on the constructs toward behavioral intention to apply e-filing in the corporate taxation.

Visually, the interaction effect path is illustrated as in Figure 4.8. The figure diagrammed the five (5) interaction effects on a construct, *i.e.* performance expectancy towards behavioral intention. The summary of structural model hypotheses and parameters as well as its illustration of the other constructs is as in the attachment (refer Appendix 6B – 6F). In summary the parameters related to test the hypotheses for performance expectancy are as the following:

Table 4.30
The summary of structural model hypothesis and parameter for Figure 4.8

Hypothesis	Parameter
H_{1b}: PE *design → BI	$P_{BI,PE*design}$
H_{2b}: EE *design → BI	$P_{BI,EE*design}$
SI *design → BI	$P_{BI,SI*design}$
FC *design → BI	$P_{BI,FC*design}$
H_{5b}: PV *design → BI	$P_{BI,PV*design}$

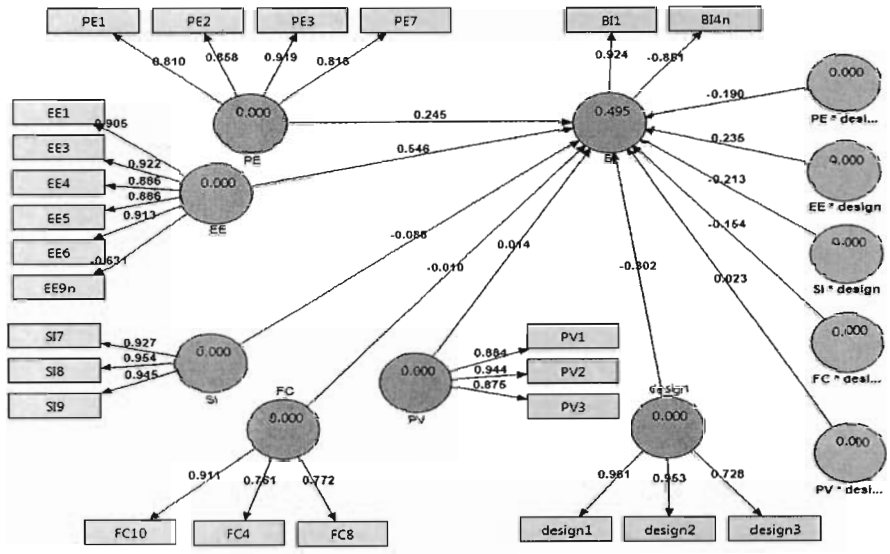

Figure 4.8
Structural model of performance expectancy-behavioral intention's moderating constructs

Referring to Figure 4.8, the performance expectancy (PE), effort expectancy (EE) and perceived value (PV) are the hypothesized construct to have relationship with behavioral intention (BI). Whereas, social influence (SI) and facilitating condition (FC) are the non-hypothesized constructs, which is also predicted to have relationship with BI. This direct relationship is further analyzed to determine the significance of moderators, *i.e.* design characteristics, incentive alignment, user participation, training and organization and peer supports. Therefore, new paths are created to represent the interaction effects on the direct relationship, *i.e.* PE*design, EE*design, SI*design, FC*design as well as PV*design (Table 4.30). The same principal is applied to the other four (4) moderators on performance expectancy, effort expectancy, social influence, facilitating condition and

perceived value towards behavioral intention. The details of structural model hypothesis, new paths creation and parameters are summarized in the Appendices 6B to 6F.

4.9.4 Analyzing the Moderating Variables in a Model

Volume of transaction is one of the new introduced moderators in this research model. This moderator is analyzed via bootstrapping approach as it is in the form of non-continuous scale. The parameter is estimated based on ML estimation derived on 500 usable bootstrap samples. In the process of analysis, two (2) bootstrap samples are unused because a solution is not found. The output tree that represents the estimation of standard error of each loading parameter for this model is attached in the appendix.

Indeed, compared to the original samples' ML standard error estimation (*i.e.* S.E. - S.E. Column), the approximate standard error of the bootstrapping is within the acceptance level, *i.e.* small from the original samples. On the other hand, the bias results that are the difference of mean between the bootstrap and the original at estimations shows that there is no bias due to low differences reported. As for the goodness-of-fit indices, the standardized estimations are almost within the acceptable range. The absolute fitness reported for group one (1) that consist of 60 or less clients is above 0.08 (*i.e.* RMSEA = 0.094). The incremental fit is above *i.e.* CFI is above 0.9 (0.928), TLI is 0.914 and IFI is 0.930. The parsimonious fitness also shows an acceptable level, which the ratio is below five (5), *i.e.* 1.617 with degree of freedom of 174. As for group two (2) where the number

of clients are above 60, the absolute fitness reported is above 0.08 (*i.e.* RMSEA = 0.099). The incremental fit is above, *i.e.* CFI is almost 0.9 (0.893), TLI is 0.871 and IFI is 0.895. The parsimonious fitness also shows an acceptable level, which the ratio is below five (5), *i.e.* 2.574 with degree of freedom of 174. The indication of significance level for volume of transaction is very much depends on the chi square and degree of freedom values. The basis of comparison is between the constraint and unconstraint models for each group on each construct. Indeed, the degree of freedom with a difference of one (1) and chi square difference of above 3.84 for each group on each constructs ensured the moderation is significant (refer Appendix 6A).

Table 4.31a and 4.31b contains the standardized parameter estimates (chi square and degree of freedom), standardized indirect effects for all constructs and its effect on the interaction of volume of transaction. Basically, the three (3) hypotheses reported, *i.e.* H_{1a}, H_{2a} and H_{4a} indicates having significance effect and successfully moderate the direct relationship between exogenous and endogenous. This relationship simply means that volume of transaction does moderate the influence of performance expectancy, effort expectancy and facilitating condition. Specifically, the volume of transaction is tested via multi group estimation to determine which group of volume, *i.e.* high or low is more pronounced in giving group effect for the moderator variable. The group that is determined from the standardized beta estimate (slope) indicates that high volume of transaction give more impact on performance expectancy and effort expectancy rather than low volume of transaction group (Table 4.31b). As for the facilitating condition, low

group of transaction is more pronounced in affecting the direct relationship of the constructs (Table 4.31a). In addition, the analysis also pointed out the significant effect of volume of transaction in social influence and perceived value constructs (Table 4.31a and 4.31b). On the whole model, high volume of transaction is affected the relationship toward behavioral intention more pronounced. The ability to explain the relationship of the whole model of behavioral intention towards tax e-filing acceptability is increased slightly to 52.8 per cent. The increment of 0.2 per cent in the power of explained suggest that volume of transaction does improve the best model.

Table 4.31a
Hypothesis testing result of volume of transaction (Group 1: Low volume)

Hypo-thesis	Relationship	Constraint		Unconstraint		Estimate	Result
		x^2	DF	x^2	DF		
H_{1a}:	PE* Volume →BI	285.936	175	281.41	174	.191	S
H_{2a}:	EE* Volume →BI	281.832	175	281.41	174	1.223	NS
	SI* Volume →BI	295.581	175	281.41	174	-.156	S
H_{4a}:	FC* Volume →BI	288.582	175	281.41	174	-.868	S
	PV* Volume →BI	285.915	175	281.41	174	-.057	S

Notes: ***p<0.001, **p<0.05, *p<0.1, S=Significance, NS=Not Significance

Table 4.31b
Hypothesis testing result of volume of transaction (Group 2: High volume)

Hypo-thesis	Relationship	Constraint		Unconstraint		Estimate	Result
		x^2	DF	x^2	DF		
H_{1a}:	PE* Volume →BI	451.997	175	447.872	174	.624	S
H_{2a}:	EE* Volume →BI	462.945	175	447.872	174	.458	S
	SI* Volume →BI	468.300	175	447.872	174	-.174	S
H_{4a}:	FC* Volume →BI	458.209	175	447.872	174	-.201	S
	PV* Volume →BI	463.517	175	447.872	174	-.198	S

Notes: ***p<0.001, **p<0.05, *p<0.1, S=Significance, NS=Not Significance

The structural model as in Figure 4.9 to Figure 4.13 in Appendices 6B to 6F represents the other type of moderators needs for estimation and validation to test the interaction effects on each hypothesized relationship. The analysis is proceeded via PLS approach. Besides testing the significance level, the model fitness, *i.e.* average variance explained (AVE) and composite reliability (CR) is checked for its consistency of structural relationships with its theoretical expectations. Validation of the model also focused on the individual parameter estimates in order to determine the statistically significant. Table 4.36 to 4.40 contains the standardized parameter estimates for all of the possible structural relationships including the non hypotheses relationships. Relatively the new paths suggested if any, give an idea on model improvement or respecification for further research.

The following table (Table 4.32) contains the standardized parameter estimates for all constructs and its effect on the interaction of design characteristic. Basically, two (2) out of the three (3) hypotheses, *i.e.* H_{1b} and H_{2b} reported as having significance effect and successfully moderate the direct relationship between exogenous and endogenous constructs. This relationship is simply indicated that design characteristic does influence the performance expectancy and effort expectancy, which could change the intention of tax agents/preparers toward e-filing acceptability. Interestingly, the other two (2) relationships that are not hypothesized shows a significance effect ($p<0.000$) on the relationships of social influence and facilitating conditions toward behavioral intention to use e-filing in Malaysia. In terms of fitness of all the constructs either hypothesized or

not, the average variance explained (AVE) that supposed to be more than 0.5 is achieved except for facilitation condition construct (0.4569). This means that design characteristic is the best moderator to explain all the other constructs' relationships. The values composite reliability (CR) for all constructs explained that design characteristic is reliable as a moderator since the value is more than 0.6. The power of explained, however, reduce to 49.5 per cent.

Table 4.32
Hypothesis testing result of design characteristic

Hypothesis	Relationship	Fitness		Estimate	t-value	Result
		AVE	CR			
H_{1b}:	PE* Design → BI	0.7038	0.9658	-.190	2.987***	S
H_{2b}:	EE* Design → BI	0.6901	0.9499	.235	2.750***	S
	SI* Design → BI	0.7396	0.9621	-.213	4.437***	S
	FC* Design → BI	0.4569	0.8653	-.154	2.994***	S
H_{5b}:	PV* Design → BI	0.6517	0.9431	.023	0.298	NS

Notes: ***p<0.001, **p<0.05, *p<0.1, S=Significance, NS=Not Significance

Referring to Table 4.33, user participation is accepted as a moderator to the hypothesized relationship of performance expectancy and behavioral intention (H_{1c}) at $p < 0.000$. In fact the pushing factor is well explained the relationship (AVE > 0.5) and almost 97 per cent could be relied on. However, user participation is failed to moderate the relationship of social influence on behavioral intention toward e-filing among tax agents/preparers (H_{3c}). Interestingly, the interaction effect of user participation in behavioral intention is the highest among the other moderators. The power of explained improved to 55.1 per cent with the interaction effect of user participation in the relationships.

Table 4.33
Hypothesis testing result of user participation

Hypothesis	Relationship	Fitness		Estimate	t-value	Result
		AVE	CR			
H_{1c}:	PE* Participation → BI	0.5792	0.9648	.347	3.083***	S
	EE* Participation → BI	0.2326	0.8666	.162	0.992	NS
H_{3c}:	SI* Participation → BI	0.5229	0.9400	.002	0.031	NS
	FC* Participation → BI	0.5525	0.9480	.225	0.909	NS
	PV* Participation → BI	0.5553	0.9483	-.175	1.134	NS

Notes: ***p<0.001, **p<0.05, *p<0.1, S=Significance, NS=Not Significance

The other moderators, *i.e.* incentive alignment, training as well as organization and peer supports are illustrated in Table 4.34, Table 4.35 and Table 4.36 respectively. The 11 hypothesized relationships with the effect of interaction are reported as not significance except on PE*training effect (H_{1e}). This means that the influence of performance expectancy on behavioral intention toward tax e-filing among tax agents/preparers is not moderated by incentive alignment (H_{1d}) as well as organizational and peer supports (H_{1f}). Besides that, the influence of effort expectancy on behavioral intention toward tax e-filing among tax agents/preparers is not supported neither by incentive alignment (H_{2d}), training (H_{2e}) nor organizational and peer supports (H_{2f}) interaction effects. In addition, the influence of social influence on behavioral intention toward tax e-filing among tax agents/preparers is not affected by incentive alignment (H_{3d}) as well as organizational and peer supports (H_{3f}). Moreover, the influence of facilitating condition on behavioral intention toward tax e-filing among tax agents/preparers is not moderated by organizational and peer supports (H_{4f}). On top of that, the influence of perceived value on behavioral intention toward tax e-filing among tax agents/preparers is not affected by the interactive effects, *i.e.* incentive alignment (H_{5d}) as well as organizational and peer

supports (H_{5f}). In terms of power explained, the three (3) moderating gives a decrement effect on the behavioral intention as the R^2 reported are 0.497, 0.427 and 0.453 respectively by the effect of training, incentive and support.

Table 4.34
Hypothesis testing result of training

Hypothesis	Relationship	Fitness		Estimate	t-value	Result
		AVE	CR			
H_{1e}:	PE* Training → BI	0.5260	0.9294	.378	3.076***	S
H_{2e}:	EE* Training → BI	0.5895	0.9290	.057	0.483	NS
	SI* Training → BI	0.5968	0.9284	.138	0.984	NS
	FC* Training → BI	0.3964	0.8385	.177	1.036	NS
	PV* Training → BI	0.6452	0.9417	-.153	1.048	NS

Notes: ***p<0.001, **p<0.05, *p<0.1, NS=Not Significance

Table 4.35
Hypothesis testing result of incentive alignment

Hypothesis	Relationship	Fitness		Estimate	t-value	Result
		AVE	CR			
H_{1d}:	PE* Incentive → BI	0.6031	0.9602	-.000	0.002	NS
H_{2d}:	EE* Incentive → BI	0.6215	0.9513	.018	0.143	NS
H_{3d}:	SI* Incentive → BI	0.6896	0.9635	-.067	0.989	NS
	FC* Incentive → BI	0.5691	0.9401	.058	0.547	NS
H_{5d}:	PV* Incentive → BI	0.7035	0.9659	.093	0.803	NS

Notes: ***p<0.001, **p<0.05, *p<0.1, NS=Not Significance

Table 4.36
Hypothesis testing result of organization and peer supports

Hypothesis	Relationship	Fitness		Estimate	t-value	Result
		AVE	CR			
H_{1f}:	PE* Support → BI	0.8364	0.9839	.190	0.871	NS
H_{2f}:	EE* Support → BI	0.8010	0.9783	.017	0.095	NS
H_{3f}:	SI* Support → BI	0.8242	0.9768	.193	1.193	NS
H_{4f}:	FC* Support → BI	0.7256	0.9590	-.060	0.445	NS
H_{5f}:	PV* Support → BI	0.8201	0.9762	-.146	0.720	NS

Notes: ***p<0.001, **p<0.05, *p<0.1, NS=Not Significance

Conclusively, the two (2) new non hypothesized interaction effects are discovered in this research. The interaction effects are design characteristic on social influence and facilitating conditions toward behavioral intention. The significance effect of the moderator shows that design characteristic is a reliable construct (*i.e.* CR > 0.90) to explain the interaction effect on the direct relationship toward behavioral intention of tax agents/preparers on tax e-filing. Indeed, the social influence construct is well explained with the effect of design characteristic as the AVE is the highest reported with 0.7396. However, the facilitating conditions seem to have effect on the other element more than the design characteristic as the AVE is less than 0.5.

Relatively, the improvised theory is able to account for 52.6 per cent of the variance (*i.e.* adjusted R^2) in behavioral intention. The direct hypothesized relationship reported is significant on three (3) out of the five (5) relationships. This simply means that only performance expectancy, effort expectancy and social influence could influence behavioral intention directly. In addition, the significance moderating influences of volume of transaction, design characteristics, user participation and training are appeared to be as a new range of interaction effects in the features of extended the UTAUT model. In total, out of the 19 hypothesized relationships with the interaction effects, seven (7) appeared to be having some roles in influencing the behavioral intention of tax agents/preparers. Specifically, the constructs of performance expectancy is significantly moderated by the volume, design, participation and training in influencing the tax

agents/preparers to choose tax e-filing. Effort expectancy on the other hand is influenced by volume and design. Whereas, facilitating condition has an effect of volume on the behavioral intention. In addition, perceived value is successfully moderated by volume of transaction. The other construct that is significantly moderated by volume of transaction and design characteristic is social influence. Hence, as whole there are 11 significance paths that successfully influenced the five (5) constructs of behavioral intention. However, the power of explained varies to effect of interaction in the direct relationship. As reported the R^2 is between the ranges of 42.7 per cent to 55.1 per cent. In details, the interaction effects of design, training, support and incentive reduced the power of explanation compared to volume and participation, which increase the explanation ability in behavioral intention. The detail discussion on the matter concerned on the related constructs is pointed in the following chapter.

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Introduction

Specifically this chapter is divided into several parts. The first part is a summary of the research to refresh the understanding on background, objective, methodology and analysis. The discussion component is focus on details, conclusion as well as results obtained from the analysis via SEM approach. This part also in detail discusses on the research objectives. Then, proceed with a discussion on the implications of this research on theory, measurement and policy. Accordingly, the limitations, recommendation and conclusion are drawn in order to close the discussion on the topic - **The determinants of behavioral acceptance for tax e-filing among tax agents/preparers in Malaysia.**

5.2 Research summary

The idea of moving towards e-government in Malaysia started with the vision to be achieved in year 2020 to become a fully developed country. The idea is to replace the existing manual system to fully electronic handling system. In rationalizing the vision, the Malaysian Government since then is spending a huge amount in setting the Government Integrated Telecommunications Network (GITN) infrastructure that

comprises of a nationwide telecommunications frame relay and a computing network built for the public sector. The application of e-government in Malaysia is successfully realized the objective of moving beyond the mere computerization of government. The realization of the objective is through the re-invent in the Government Transformation Plan and to catalyze the successful is with the development of the MSC (MSC, 1997). Unfortunately, the huge amount of investment in upgrading the technology seems to be wasted as there are operations not fully utilized the resources provided by the government. The evidence of low/unsatisfactory acceptance level is also a concern in the tax e-filing system introduced by the Inland Revenue Board of Malaysia (IRBM), which is less than 20 per cent in year 2009. Hence, the big question mark at this point is how such challenges could be defeated when the time for Malaysian government to achieve the stage of developed nation is yet less than 10 years. Even though the tax e-filing option is increased to 76 per cent in year 2013, still it is unable to achieve a fully tax e-filing implementation.

There must be some explanations on why such situation happens. Despite all the development toward a better, improve and easier electronic filing system, it remained unaccepted or less accepted. The tax e-filing usage by the citizen is seriously underused in spite of the availability and improvement of the technology. Thus, there is desperately a need to understand the determinants of tax e-filing acceptability. Even though many researches are conducted in searching for the answer, yet the problem of low/unsatisfactory tax e-filing acceptability is still lacking in the literature. Thus, this

research attempt to develop further understanding on the key questions that have no comprehensive empirical answer until today: the major factor of low/unsatisfactory acceptance due to low/unsatisfactory tax e-filing acceptability. Therefore, this research is designed for the following objectives: (1) to determine the level of acceptance of tax e-filing among Malaysian tax agents/preparers; (2) to identify the determinants of tax e-filing acceptability; and (3) to examine how the factors identified in two (2) are related to tax e-filing acceptability.

Conclusively, this research is on the behavioral intention on technology application. The form of tax e-filing technology introduced in Malaysia particularly on corporate taxation is however, not fully utilized, despite huge amount of budget allocated for this matter. The underpinning theories applied in conducting this research is an extension of the Unified Theory of Acceptance and Use of Technology (UTAUT) that tested the direct relationship as well as moderating effects on behavioral intention as introduced in TAM3. The formulation of a new theory of technology acceptance, UTAUT that covers the user intention, evidenced the lacking aspect in the previous models. This theory with the introduction of a new group of moderators is expected could provide more effective guidance in understanding the determinants of acceptance in technology as proposed in this study. Even though this unified model is accepted and integrated in many studies of various fields, their results revealed some inconsistencies when applied in different areas or situations. In other words, there is no universal UTAUT that can explain all situation of acceptance. As such, the present research is attempted to discover enrichment the

model of acceptability in a situation where authority is involved in encouraging professionals to adopt the proposed system.

In total, there are 1,871 tax agents/preparers officially register with IRBM scattered in the 15 different states in Malaysia. However, the sample size are limited to 714 which taken into consideration of an additional 70 per cent from the recommended size, *i.e.* 420 tax agents/preparers as according to the table suggested by Krejcie and Morgan (1970). Tax agents/preparers are considered the sample instead of the corporate taxpayers/clients. This is because freedom in choosing the medium of transaction on tax filed to IRBM is fully given by the corporate taxpayers/clients to the tax agents/preparers. Indeed, the influence or factors from point of view corporate taxpayers/clients are not considered. The questionnaire that is design using 7-point Likert scale is sent via mail to respondents who are selected randomly using simple random sampling technique throughout Malaysia. The selection is made based on the list developed using SPSS software, which excluded the tax agents/preparers who have been participated during the Delphi and pilot test. In advance to that, an interview among tax agents/preparers randomly selected in Kedah and Selangor state are conducted to get a more comprehensive and conclusive answers during the pre-test. All instruments are adapted from the literatures and modified to suit with the tax e-filing behavioral intention in Malaysia. The questions are designed to cover the constructs that would determine the behavioral intention of tax agents/preparers to accept tax e-filing. All constructs are analyzed via the measured items

using 7-point Likert type scale anchor by "strongly disagree" (1) to "strongly agree" (7). The open-ended questions failed to be analyzed because none of the questions is answered by the tax agents/preparers. Therefore, the overall opinion from the respondents is unable to be further analyzed and discussed. As for this research, the UTAUT model is modified and change in order to represent the situation of tax e-filing in Malaysia. Most of the original determinants are tested with an additional factor is considered, *i.e.* perceived value. In addition, a new range of moderators is introduced as suggested in TAM3, *i.e.* design characteristics, incentive alignment, user participation, training as well as organization and peer supports. This study is also tested on the effect of volume of transaction as a moderator. It is considered an important pushing factor in choosing technology instead of manual system and yet to be empirically approved.

On the whole, the direct relationshipS between the constructs were successfully explained almost 53 per cent of the behavioral intention towards tax e-filing. However, with the inclusion of moderation effects, the power of explanation is between 43 to 55 per cent. It should be noted that performance expectancy appears to be the determinants of intention in most situations; the strength of the relationship varies with moderator's effect, *i.e.* volume of transaction, design characteristic, participation and training. The effort expectancy and social influence on intention is conditional on volume of transaction and design characteristics. Interestingly, it is found that the construct of social influence is negatively significant when the data are analyzed without the inclusion of moderators. The effect of facilitating conditions on intention is only significant when examined in

conjunction with the moderating effects of volume of transaction and design characteristics. Finally, the effect of perceived value on intention is moderated by none of the interactions hypothesized, but it is actually influenced by volume of transaction. Theoretically, UTAUT provides a refined view of how the determinants of behavioral intention evolve over time. It is important to emphasize that most of the key relationships in the model are moderated by the volume of transaction as well as the design characteristics.

Previous researchers have highlighted the importance of UTAUT's variables to the intention and adoption of e-filing. This research attempts to provide insights into its facets, thus, providing useful input on the determinants towards intention to use tax e-filing among tax agents/preparers in Malaysia. One of the strong points of the UTAUT model is its ability and successfully explains user acceptance in a more realistic manner than the other models. However, some form of extension, modification and improvement upon the existing technology acceptance models are vital. The UTAUT model could at this stage serve as a benchmark against all future models; much like TAM did over the past few decades. Although UTAUT seems to provide a fuller empirical support on understanding user intention and behavior, but the situation of voluntariness in e-filing might give a different idea as well as effect for this research. Hence, certain modification and extension are required in this research where it could provide more reflective guidance to policy-maker and enable to promote e-filing in Malaysia.

The summary of the findings for this research is as the table below:

Table 5.1
Summary of the overall findings (n=231)

Hypothesis	Relationship	Result
H_1:	PE + → BI	Supported
H_2:	EE + → BI	Supported
H_3:	SI + → BI	Supported
H_4:	FC + → BI	Not supported
H_5:	PV + → BI	Not supported
H_{1a}:	PE* Low volume →BI	Supported
H_{2a}:	EE* Low volume →BI	Not supported
	SI* Low volume →BI	Supported
H_{4a}:	FC* Low volume →BI	Supported
	PV* Low volume →BI	Supported
H_{1a}:	PE* High volume →BI	Supported
H_{2a}:	EE* High volume →BI	Supported
	SI* High volume →BI	Supported
H_{4a}:	FC* High volume →BI	Supported
	PV* High volume →BI	Supported
H_{1b}:	PE* Design → BI	Supported
H_{2b}:	EE* Design → BI	Supported
	SI* Design → BI	Supported
	FC* Design → BI	Supported
H_{5b}:	PV* Design → BI	Not supported
H_{1c}:	PE* Participation → BI	Supported
	EE* Participation → BI	Not supported
H_{3c}:	SI* Participation → BI	Not supported
	FC* Participation → BI	Not supported
	PV* Participation → BI	Not supported
H_{1d}:	PE* Incentive → BI	Not supported
H_{2d}:	EE* Incentive → BI	Not supported
H_{3d}:	SI* Incentive → BI	Not supported
	FC* Incentive → BI	Not supported
H_{5d}:	PV* Incentive → BI	Not supported
H_{1e}:	PE* Training → BI	Supported
H_{2e}:	EE* Training → BI	Not supported
	SI* Training → BI	Not supported
	FC* Training → BI	Not supported
	PV* Training → BI	Not supported

Table 5.1 (Continued)

Hypothesis	Relationship	Result
H_{1d}:	PE* Incentive → BI	Not supported
H_{2d}:	EE* Incentive → BI	Not supported
H_{3d}:	SI* Incentive → BI	Not supported
	FC* Incentive → BI	Not supported
H_{5d}:	PV* Incentive → BI	Not supported
H_{1f}:	PE* Support → BI	Not supported
H_{2f}:	EE* Support → BI	Not supported
H_{3f}:	SI* Support → BI	Not supported
H_{4f}:	FC* Support → BI	Not supported
H_{5f}:	PV* Support → BI	Not supported

Notes: PE=Performance Expectancy; EE=Effort Expectancy; SI=Social Influence; FC=Facilitating Conditions; PV=Perceived Value; BI=Behavioral Intention

5.3 Discussion

The results of this study support most of the theories by indicating behavioral intention among tax agents/preparers in applying tax e-filing. The utmost, this research confirms the ability of the direct relationships in UTAUT model to determine user's acceptance of a technology tool introduce. The UTAUT model is modified in this study by including the constructs suggested in TAM3 as moderators. The data produced in the statistical analysis on 231 respondents based on simple random sampling method provides a basis to the construct hypotheses. The statistical tool applied in the result analysis is Structural Equation Modeling (SEM) with additional supports from Partial Least Squares (PLS) and Bootstrapping. The discussion part is structured to answer the three (3) research objectives, which then referred to the possible implications to the theory as well as management. Accordingly, future research is recommended in the area of tax e-filing among tax agents/preparers in Malaysia in particular and on technology as whole.

5.3.1 First objective

The purpose of this research is to determine the behavioral intentions of tax agents/preparers in Malaysia regarding the acceptance of tax e-filing system by incorporating the UTAUT model. This is to encounter on the level of acceptance of tax e-filing among Malaysian tax agents/preparers. In addition, this research also determined the effect of selected moderators to the relationship between tax agents/preparers' behavioral intention and performance expectancy, effort expectancy, social influence, facilitating conditions and perceived value.

The explanatory power of the model is examined via the R^2 value for behavioral intention. The combination of all the constructs accounted for 52.6 per cent of the variances observed in tax agents/preparers' intention to use the system. As expected, the model explains a moderate amount of the variance. This result is highly consistent with the results of previous research that found the range of 0.4 to 0.42 in the direct effects model (Venkatesh et al., 2003). The moderation effects on the other hand, are weakened the direct relationship, which reduced the variance explained to the range of 43 per cent and 55 per cent. However, this result is a reasonable accepted percentage of variance explained. This is basically due to the R^2 value is still within the range of 0.50 to 0.76 in the relationship with the interaction effects (Venkatesh et al., 2003). As whole, the effect size (f^2) on the level of acceptance is small (*i.e.* 0.05 to 0.19) (Cohen, 1988). The main reason of the moderate variance explained perhaps due to low respondent rate of only 32

per cent (231/714), compared to other UTAUT researches with variance of explained more than 70 per cent where the respondent rates are over two-thirds (2/3) of the sample. Even though in social science researches generally the 32 per cent of respondents' rate is considered high.

In the research in which the UTAUT model is developed, the power of explanation successfully achieved as high as 70 per cent of behavioral intentions. In this research pertaining to tax agents/preparers' behavioral intention, the model explained is almost 53 per cent. Even though the model explained not even closed to the original model, identifying the extent to which the UTAUT model fully encompasses the technology acceptance process is also valuable. This is due to its ability to define the boundary conditions in which the UTAUT could be used and generalized within research and business contexts as discussed in the next section.

5.3.2 Second objective

On the basis of the total effects on behavioral intention, all constructs except facilitating conditions and perceived value determinants of tax e-filing acceptability are found to be significant. Simultaneously, the effect of interactions are also observed and found that volume of transaction and design characteristic are the most influential moderators on the direct relationship between the constructs. The model accounted for almost 53 per cent of the variance in behavioral intention. The path coefficients from performance expectancy,

effort expectancy, social influence are all significant at $p<0.001$ level. Even though the three (3) main constructs are significance determinants as expected, but surprisingly effort expectancy is exhibited as the strongest direct and total effect on behavioral intention. In addition, social influence also required some discussion as the effect on the direct relationship is negative. These two (2) constructs, however, are contradictory to most of UTAUT's previous findings in the acceptance research.

i- Performance expectancy and effort expectancy are significantly influence the behavioral intention

Coinciding with the findings of Venkatesh et al. (2003), the performance expectancy and effort expectancy constructs derived from UTAUT had a significant positive influence on behavioral intention to use tax e-filing system. Performance expectancy is found to be significant and among the most important factors in this research ($\beta = 0.46$, $p < 0.001$). Hence, tax agents/preparers agreed that using the specific tax e-filing system could increase their job performance within an organization context. Effort expectancy is also found to be significance and appear to be the strongest construct in this research ($\beta = 0.65$, $p < 0.001$). Indeed, tax agents/preparers do highly expect that the target tax e-filing system to be free of effort. As discussed in the literature and supported in this research, the attitude constructs is well taken care of performance expectancy and effort expectancy ($\beta = 0.16$, $p = 0.408$). In fact, this non significance constructs focus more on the intrinsic motivation as the items to be measured. This simply means that tax

agents/preparers affected more toward the use of the system that is pleasant, enjoyable, have fun and could make work more interesting.

ii- Social influence is significantly influence the behavioral intention

As is evident from the literature, the role of social influence construct has been controversial. Some have argued for their inclusion in models of adoption and use (Taylor & Todd, 1995b; Thompson et al., 1991), while others have not included them (Davis et al., 1989). Previous work has found social influence to be significant only in mandatory settings. In this research, the social influence do play some role however, it is negatively related to the behavioral intention ($\beta = -0.178$, $p < 0.001$). This pattern reflects that the social influence do change over time and could help in explaining some of the evasive results reported in the literature.

iii- The influence of performance expectancy, effort expectancy and facilitating conditions are moderated by volume of transaction

Volume of transaction is reported as an expected significant effect of moderator. The bootstrapping results indicates that performance expectancy, effort expectancy as well as facilitating conditions are moderated significantly ($p<0.001$) by volume of transaction. The difference in terms of constrained and unconstrained chi-square, which is over than 3.84 in each construct supports the hypotheses. In specific, the volume of transaction is tested in the form of high and low volume of transaction that supports most of the

literature. Comparatively, tax agents/preparers with the high number of clients could switch to tax e-filing system as considering the benefits over the opportunity costs. Thus, considering the performance and availability of infrastructure to support the system, volume of transaction do influence the intention to apply the e-filing system, even with the low number of clients. However, as for effort expectancy in implementing the tax e-filing system, tax agents/preparers is most likely prefer to switch to the technology as the number of clients increased.

iv- The influence of performance expectancy, effort expectancy, social influence and facilitating conditions are moderated by design characteristics

Design characteristics has a significant interaction effects on almost all of the constructs except for perceived value ($\beta = 0.023$, $t = 0.298$). Even on the direct relationships which are initially contradicted with the hypotheses, *i.e.* facilitating conditions ($\beta = -0.283$, $p = 0.354$). The non supported construct (facilitating conditions) turn out to be significant with the influence of design characteristics on the relationship toward behavioral intention ($\beta = -0.154$, $t = 2.994$). This simply explained that facilitation conditions in the form of organization and technical infrastructure supports on the tax e-filing system is only persuade the intention of tax agents/preparers to adopt the system via the effectiveness of design characteristics. In addition, the usefulness or design characteristics of the tax e-filing system to tax agents/preparers in helping their tasks is not tolerable with the value, *i.e.* time and money spending on the preparation of the

system. This is because of no interaction effect reported in perceived value construct as it is remained not significant even when design is taken into consideration.

v- The influence of performance expectancy is moderated by user participation

User participation effect on direct relationship of performance expectancy and behavioral intention is considered important element ($\beta = 0.347$, $t = 3.083$, $p < 0.001$). This is because the interaction effect of user participation gives the highest impact on the relationship, which successfully improved the power of explanation to 55.1 per cent. Indeed, in this research it is considered significant and contributed to the knowledge theoretically. User participation is referred to the assignments, activities and behaviors that tax agents/preparers perform during the systems' implementation process. Despite considering user participation as the new role of moderator in the UTAUT model, literature revealed that it is one (1) of the important element in any technology system judgment or decision making. User participation could help in enhancing or improving performance of the system to suit with its requirement via job relevance, output quality and result demonstrability judgments. In fact, having a specific person involvement to take forward the agenda would not lead to the integration, but could allow other users to give up their responsibility for user involvement. This perhaps due to the perception that one (1) person could marginalize other person's experiences. Therefore, user participation from various level of expertise is required to have a critical view prior any introduction of a new system. However, due to the immediate responsibilities and busy

schedule of work, the attention given in analyzing and evaluating the new system could be jeopardized. This is because users tend not to fully engage in the system until it give impact on their tasks, change work practices and affect the users' own domain. That is why most of the new system faced few phases of improvement even with the principle of early user participation is followed.

vi- The influence of performance expectancy is moderated by training

Training that is determined via a formal or an informal activity prepared on tax agents/preparers in order to equip them with related skills and knowledge is supporting the literature. In fact, the result is supported as training is significantly ($\beta = 0.378$, $t = 3.076$, $p < 0.001$) affecting perceive usefulness (Igbaria et al., 1995). It indicates that training is required in introducing any new technology and it is also necessary in improving or enhancing the skills. Therefore, training that is increased the task performance would be very much required at the early stage as well as after the adoption stage.

In brief, the determinants of tax e-filing acceptability are performance expectancy, effort expectancy and social influence, which is directly and significantly, influenced the behavioral intention of tax agents/preparers. However, with a moderation effect from volume of transaction and design characteristics, the facilitating conditions construct turn out to be significantly influence the behavioral intention of tax agents/preparers towards

tax e-filing in Malaysia. As far as the interaction effects concern, the design characteristics successfully influence all the UTAUT's constructs except on the perceived value which could only be influenced by the volume of transaction. The other interaction effect, *i.e.* user participation and training successfully influence the direct relationship of performance expectancy and behavioral intention. Accordingly in this research, effort expectancy appears to be the strongest construct and fully determine the tax e-filing acceptability without any inclusion of moderation effect in the relationship. Indeed, the incentive alignment as well as organization and peer supports could be dropped from the research framework. This is based on the performance of those moderating variables that does not have any interaction effects on the UTAUT's constructs (as in Table 5.1).

The following objective is further elaborate how the factors identified in this part are related to tax e-filing acceptability. Basically, the discussion in the third objective is designed in answering the hypotheses developed previously. Hence, the issues and challenges of tax agents/preparers in accepting tax e-filing in Malaysia are critically discussed in the next section.

5.3.3 Third objective

This study integrates the UTAUT model into a different environment and the constructs are used to understand the tax agents/preparers' perceptions of tax e-filing as well as explained their behavioral intentions. In fact, it offers important information regarding

perceptions toward performance expectancy, effort expectancy, social influence, facilitation conditions, perceived value and various other moderation effects. However, the UTAUT model does not adequately explain the behavioral intentions as most of the hypothesized relationship fail to be supported in the model framework.

i- Improve job performance and increase productivity

Performance expectancy is the users' willingness to use the system that has a critically useful functionality. The expectation is to help, improve or increase the job performance. Thus, it is expected to be the strongest predictor in accepting any new system introduced. However, referring to this research, the construct of performance expectancy turn out to be the second predictor in the direct relationship toward the intention to accept tax e-filing. It seems that the benefits received from the new technology is not much as the main influence on the intention to accept the system compared to the effort need to put forward in applying the system. Hence, the expectation that the technology is useful to tax agents/preparers is not necessarily the main consideration in ensuring them to use the system. Nevertheless, performance expectancy is among the strongest determinants in tax e-filing acceptability among the tax agents/preparers in Malaysia. In fact, the finding is supporting the previous research as the construct appear to be the strongest and significant determinant with the inclusion of moderators. Basically, it agrees that perceived usefulness is expected to improve job performance, increase productivity, easy to do job and assist on the job. However, perceived usefulness is not the only criteria to look upon in accepting any new system as user most likely focus on the design

characteristics as well as expecting that contribution from user could ensure the system is user-friendly. Undeniable, design characteristics is the main criteria to be focused to ensure the system is secured, easy to learn and use as well as could certainly improve the efficiency of performing tax e-filing. In addition, the aspects of number of clients, participation in system development and training should be emphasized too. This is merely because those aspects indirectly influence the performance of tax e-filing system implementation in an organization as whole.

ii- System is easy to learn, clear and understandable with a flexibility in interaction

In this research, it is also maintained that behavioral intention has a significant relationship in effort expectancy model. Finding support that effort expectancy plays role that related to job and understanding on how it could help user, *i.e.* tax agents/preparers in daily routines and duties. Perceived ease of use and complexity are definitely the major issues need to remarks. The perceptions of how to use technology in work and the learning process to use the system is valuable and is motivated towards an intention to accept the technology. In fact, the role of perceived ease of use, the functionalities and features of the introduced system are the emphasized criteria in accepting the system. Hence, satisfaction towards the system is the main indication to accept the system prior to its usefulness. This is supported as being the strongest construct in this research that contradicts to most of the findings in the acceptance research. In fact, it reveals that users really have an expectation that the system is free of effort. In addition, the tax e-filing

system is perceived as ease of use by tax agents/preparers. This means that tax e-filing is accepted due to the system is easy to learn, the interaction is clear and understandable as well as its flexibility to interact. Indeed, tax agents/preparers perceived that the acceptability of the system could help them become skillful and easy to use to perform their tasks. Most probably because tax agents/preparers are expecting the same performance for the corporate tax e-filing as in the individual tax e-filing. This expectation perhaps the pushing factor to the strong behavioral elements when users is forming an intention to act, then they are free to act without limitations.

iii- The usefulness and ease of use make the system as pleasant, enjoyable, fun and interesting

Empirically, the attitude constructs in this research is not to be the direct determinants of intention. Despite its different arguments on the significant level of the construct where some research consider as significant and others are not significantly related (Venkatesh et al., 2003), yet UTAUT prove as not significant. This is because the role of attitude is taken care of performance and effort expectancies, otherwise the construct is proven to be significant (Davis, 1989; Taylor & Todd, 1995b; Thompson et al., 1991; Venkatesh et al., 2003). Interestingly, the constructs determine that intrinsic motivation is reacted via effort expectancy (Venkatesh, 2000). Given this strong base, in this research the attitude construct appear to verify that as expected is not significance. This is merely due to the significant relationship between performance expectancy and behavioral intention as well as strong relationship exists between effort expectancy and behavioral intention. In short,

the attitude is only spurious when performance expectancy and effort expectancy constructs are absent and vice versa. In addition to that, attitude also prove that intrinsic motivation, *i.e.* affect toward use is the essential group of items in examining the construct. Thus, the motivation to accept the tax e-filing is purely due to the system that is pleasant, enjoyable, have fun, make work more interesting. Hence, tax agents/preparers were look forward to the aspects of job requirement using the system.

iv- Portrait the image of updating and accepting changes instantly

The construct of social influence is considered complex and subject to a wide range of contingent influences. In a voluntary condition, the construct tends to be non significance. This is due to the focus that is mostly on the perception toward technology. However, under a mandatory context, the expected state is significant at the early stages and erodes over time to non significance level. Surprisingly, in this research the result is partially contradicted to the literature. Even though the basis of applying the tax e-filing system in Malaysia is under a voluntary basis, yet the result of social influence construct toward intention is significant. The negative significance contribution of social influence construct to the behavioral intention of tax agents/preparers in Malaysia indicates that the construct has a negative effect on the intention to use the tax e-filing system. This finding is slightly in disagreement with the theory (Venkatesh et al., 2003). Perhaps the condition of corporation, management or clients/taxpayers who had been insisting tax agents/preparers to use the tax e-filing system has created the context to be as mandatory. Indeed, the significance level proved the perceptions. In relation to that, the negative

contribution reflect that the social influence construct is not so important in influencing the decision to choose the system or otherwise. It is believed that the relative importance of social influence is expected to vary across behaviors and situation. Another possible explanation for the negative relationship is that in the early stage, technology implementations are both far from perfect. So those who tried first is not always have positive feedback. Thus, social influence is not always work on the potential adopters in a positive way. As time goes on, the effect is eroded and became non significance. In addition, most of tax agents/preparers' agreed that influence by others in performing daily routines is a major concern. In this study, the influence of others or social influence is the significant factor in determining the intention to use the tax e-filing system. This is perhaps to maintain the image of updating concurrent issues or technology and indirectly force the individual to accept changes instantly. In fact, the acceptance is unconditional as any form of incentives alignment to the acceptance of the technology is not motivating the behavioral intentions.

v- The maturity of the information technology infrastructure and general computer literacy

The facilitating conditions construct on the other hand is not supporting the hypothesis developed in this research. The expected condition of non significance proven and clearly explain that the construct is perhaps is not affect the relationship on intention. This is due to the existence of effort expectancy elements (Venkatesh et al., 2003). Hence, indirectly it means that if the system is designed with such an ease of use, understandable and user-

friendly components, organizational and technical infrastructure are not so crucial to support the use of the system. This fact is also supported by Venkatesh (2000) that the effect of facilitating conditions on intention is mediated by effort expectancy. However, depends on the theory and circumstances, the effect of facilitating conditions on behavioral intention could be significance or otherwise. The non significance effect of facilitating conditions on behavioral intention simply mean that intention to use e-filing is not influenced by what the organization provided to support the tax agents/preparers' acceptance level and perceptions of the ease in using technology in filing tax. In fact, by having control over the system, easy to use with resources, opportunities and knowledge, availability of assistance as well as fitness with the way of work is not the criteria of acceptance. Perhaps, due to the relative maturity of the information technology infrastructure and general computer literacy in Malaysia, the concern of facilitating condition is not a question.

vi- Compatibility is not the issue of concern in facilitation conditions

Captivatingly in this research, compatibility seems to have no effect on intention to use the system introduce. In other words, the facilitating conditions construct is not crucial as the determinant to estimate the compatibility elements in the technology introduce. This is possibly explained that the compatibility issue is not a matter of concern in introducing a new system. Possibly the individual's work style and the use of the system in the organization are the reasons of the ignorance. For instance, the requirement of the organization or the instruction from the top management is definitely insist the tax

agents/preparers to use the system. In addition, with the workload or high volume of transaction, the system or technology introduce is the choice of usage and preferable in order to meet the dateline in particular. Thus, the compatibility per se is not having any effect on the intention to select or use the technology. As whole, the system itself is affected the choices made and no doubt that technology that is easy, straightforward and attractive is preferable.

vii- The system is worth the cost and good value of money

In overall assessment of the utility of the system based on users' perceptions of what is received and what is given, is not so important. This is supported in this research as the relationship between perceived value and behavioral intention is not significance. However, with an interaction effect of volume of transaction, the significant level change to be influenced the intention toward tax e-filing acceptability. This is probably explained that compared all the attributes of tax e-filing system to prices and accessibility, both are not the main criteria in making any choice. Perhaps, it is due to the willingness to adopt the new technology is still at moderate level and the focus is more on the performance attribution. Thus, number of clients that are believed to affect the task performance and successfully moderated via system application, definitely is influenced the behavioral intention. In fully understand the impact of perceived value on the tax e-filing intention or behavior, not only need to know the type of values hold, but to understand how those values are expressed in relation to an intention. Relatively in this research, the concerned is on the price, effort, time or benefits of tax e-filing to tax agents/preparers. Although

judgmental value in determining the meaning or consequences of a behavior is important, but it is not sufficient. Thus, attribution that is the cause of the behavior needs to be emphasized for better decision making. Price is often associated to sacrifice to obtain the service. However, there are also other non-monetary key measures, *i.e.* time and physical effect forms of sacrifice that very much depends on users and usage situations as well as nature of the service. In this research perceived value is focused on tax agents/preparers' evaluation of the tax e-filing service received against the perceptions of the costs, *i.e.* time, effort and monetary cost sacrifices in obtaining the service. In terms of benefits or what is receives, tax agents/preparers who satisfied with the system is most likely encourage others to apply the tax e-filing system. This is obviously due to the perception that tax e-filing is worth the cost and good value of money. In respect to what is given or cost to be sacrifice in terms of time spend on the system, effort need to put forward in understanding the system could most probably reduce the perceptions of its value. However, in this research, tax agents/preparers seems to ignore the cost to be sacrifice part as most of them agreed that tax e-filing is a good decision. This is even with or without considering the time, price and effort to forgo. Indeed, is moderately affecting the relationship of perceived value and intention to use the tax e-filing among tax agents/preparers. Nevertheless, the perceived value is perceived high regardless on the number or clients with such an easy to use functions and services. This is the main determinant in this research as the focus of tax agents/preparers are much on the non-monetary aspects, *i.e.* time, effort or energy spends in engaging with the tax e-filing system. In addition, the organization is implementing the system on behalf of their clients

with an expectation to portray a high service quality. This lead to a superior perceived value with clients' satisfaction and revealed a perception of high corporate image of the organization to the society in following rules and regulation. In fact, this corporate image that is associated with implementing system introduce in achieving the government's vision of fully electronic government system. It is positively attracted new clients as well as and holding the current clients in helping to support the vision.

viii- Pressure from the number of clients

Volume of transaction has received very little attention in the technology acceptance research literature, yet an attempt is made in this study. Basically, to support that volume does play some roles in taxation as it is relatively encouraged technology used in courts system. Relatively to this research, volume of transaction is expected to influence the relationship of performance expectancy, effort expectancy and facilitating conditions with behavioral intention of tax agents/preparers on tax e-filing. The results indicated that the literature is supported as the interaction effects are applied almost on all of the key constructs in the model. Generally, technology support is expected in a huge scale of transaction or high volume of transaction that is an effective way to save costs, time and effort (Saman & Haider, 2013; Warkentin et al., 2002). In this research specifically, volume of transaction does seem important, gives pressure on the behavioral intention to apply tax e-filing at a point of having huge clients instead of low number of clients. Perhaps due to perceived ease of use, volume does not matter with small number of clients. However, in terms of social influence, facilitating condition and perceived value

of the system, tax agents/preparers is definitely switched to tax e-filing regardless of the number of client. Thus, the main criteria are the performance, effort to put forward and the value of the system. If the system introduces is convinced and able to provide service that is improve job performance, increase productivity, and easy as well as assist on the job task, it is more likely the system is used. In addition, if the system is built or develops in such a way that easy to learn as well as with interactions which are clear, flexible and understandable; the system is chosen. Hence, if tax agents/preparers perceived those qualities in the tax e-filing, definitely the system is given a chance to be adopted in their daily routine tasks if necessary infrastructure and technical medium of interaction is provided.

ix- Design characteristics change the performance and user of the system

Theoretically, UTAUT provides a refined view of how the determinants of behavioral intention evolve over time. It is important to emphasize that most of the key relationships to the model are moderated with design characteristics. Design characteristic that has received some recent attention is also a key moderating influence in this research. In fact, it is consistent with findings in the literatures (Al-Natour et al., 2006; Leach et al., 2009) and it appears to work in concern with technology. Relatively to the effort expectancy, design characteristic shows an interaction effect to the construct towards behavioral intention. The design characteristics are not only changed or influenced the perceptions about the system or performance of the system but also the users. Hence, free of effort is the priority criteria in choosing to accept the new introduce tax e-filing system. Indeed,

various other technology characteristics such as speech acts, decisional guidance and decision rules could be used as guidelines to patent clear and distinguishable personality and behavioral characteristics in tax e-filing. In addition, referring to the AVE result, design characteristic seems to be not so important factor to influence the facilitating condition toward increasing the intention to use technology. Even though the path determine reflect a significance effect ($p<0.001$), but the design characteristic is not the best factor to explain the interaction effect (AVE = 0.4569). In this case, almost 55 per cent of the pushing factor is explained better by other factor. In this condition, perhaps the infrastructure and technical assistance are more important than the design alone. In fact, with resources, opportunities and knowledge provided in handling tax e-filing and with direct or easy instructions, the system is certainly a choice of way to accomplish in tasks.

x- Create a feeling of ownership and reduce the indistinctness in system's design

User participation or involvement is defined as behavioral, which is distinct from other subjective psychological status, *i.e.* user attitude that is defined as affective or evaluative judgment. Consistently, users is considered participate in any system development as in this research in tax e-filing system development stage when there is action of taking part or contribute to. The participation is accessed via specific assignments, activities and behaviors which are perform during the system development process. Indeed, user participation is one (1) of the best mechanisms for managing user perceptions on the

important of new system prior to its introduction. In fact, involving users in the phase of software development is frequently listed as a critical successful factor and also supported in this research. Perhaps tax agents/preparers believe that via participation users could influence the performance as well as design of a new system and satisfying the needs as well as requirement. This includes approved requirement; reviewed system analyst work; change in system agreement; responsible in software selection; as well as help in formatting and creating manual of tax e-filing system. Undeniably, the feelings of ownership is developed, a better understanding of the new system is achieved and help in job performance. In one (1) way, the contribution from users is creating a new need to understand and care processes that are required to make the new system effective once implemented. Principally, there are multiple benefits benefited via participation in design stage includes increase in user accountability, which resulting in higher commitment in work task, reduced resistance to change as well as increase in job satisfaction (Subramanyam et al., 2010; Wagner & Piccoli, 2007). Certainly, the participation and knowledge transfer during the research and development stages, independently and objectively could generate a new system with a commercial value. It is grounded in the ultimate users' needs, which is validated as technically and cost-effectively. However, with an excessive participation of tasks, somehow is creating conflicts with the management that is possibly could be avoided. Obviously, users is not participating more if the new system is believed to be good, important or personally relevant. Thus, any form of pressures or opinions from social is not affected the intention to accept or refuse the technology introduce. User participation is essential in any stage of software or

system development as this group of users definitely have clearer expectations from the end-product. Undeniably, those users have comparative knowledgeable about desirable functionality. Thus, software designers and initiator are greatly benefited from seeking these inputs and minimizing the indistinctness in design requirement and choices.

xi- Ensure task is smoothly performed

Knowledge is easily transferred among people with similar training, background and job characteristics. This implies that in an organization unit, more likely to be productive if engaged in knowledge sharing that shapes the use of new system. Hence, training is the best medium with more informative and easy transition in influencing the acceptance to change. User's acceptance of technology is closely linked by the user's awareness of the technology and its purpose; the consistency of user's need to the features of the technology; the user's experience with the technology and the availability of support, *i.e.* documentation and training (Czaja & Sharit, 1998). In fact, the resistance to use any introduced technology is decreased when adequate time and exposure through training is implemented. Even though training seems to be important in the early of the development stage as well as during the implementation stage as stressed out by tax agents/preparers, yet the requirement of training is merely not essential if effort need to be put forward. In this research the non significance effect of training on behavioral intention revealed that the technology or e-filing system implemented is really easy to understand and operates. Due to that, any form of training even though is a necessity is not required and applicable to the tax agents/preparers. Thus, if considering effort, the system is expected to be

simple and easy to operate, which required no training. However, tax agents/preparers expecting a series of training in ensuring the task is smoothly performed without any limitation.

xii- Incentive alignment is mostly depends on the goal to achieve

In the aspect of incentive attached to technology acceptance, it could be some form of intrinsic motivation in increasing or improving the intention to adopt the specific technology introduce. In fact, scholars also stressed that it is essential to include the incentive elements as a form of extrinsic rewards (Ba et al., 2001; Deci et al., 1999; Ryan & Deci, 2000). This is due to the acceptance level is failed without alignment of interest and incentives, even with great system features and capabilities (Skinner, 1969). In this research, it is assumed that incentive alignment is most probably influenced the performance expectancy, effort expectancy, social influence and perceived value towards an improvement in behavioral intention to accept tax e-filing system. However, the element of incentives failed to support any of the constructs, which left the point to question the role of incentive in respect to tax e-filing among tax agents/preparers in Malaysia. Generally, in obtaining specific result, an alignment of incentives is set with the goal. There is also a time where a desired behavior is not rewarded which mostly depends on the plan to achieve. This is the case of tax e-filing, where the task is adequately accomplished even without any form of compensation or incentives. In fact, this is the accepted truth where in most cases, incentives have only modest impact and do not have sustained effects and perhaps could be costly too. As for the reason, the critical

issue is the desired result that vital to achieve, *i.e.* more fair payment, improved performance or affordability. Hence, an ultimate solution or governing objective needs to be developed, even if those reasons are aimed to be achieved. Incentive alignment seems not to be the appropriate tool to improve or increase the acceptance level in tax e-filing. On top of the appropriateness of incentive alignment, there is perhaps related to the issue of fair or right to grant incentives. Despite not supposed to receive incentive on important programs, organization need to be loyal to communities and is expected to portrait as a good corporate citizens. Hence, it unlikely to demand for incentive in ensuring the government policies successfully implemented for the benefit of the society (Ericson, 2011). The most effective incentives for a project are those that target a key area of competitive advantage for the company or offset a disadvantage for the community. In this particular research, neither the tax agent on behalf of the company nor corporate taxpayers expected gains or suffer from the existing non-technology system. Thus, incentive alignment plays no important roles and it is supported in this research.

xiii- Supports are essential in the complex system

Social influence is considered crucial determinants in the early stage of use, but it is treated as external pressures expected by peers and superiors in influencing the individual's perceptions related to system use. In this research, the construct of organization and peer supports is not given any significant effect on the constructs in the UTAUT model. Relatively to the information technology, it is expected to be influencing the behavioral intentions of tax agents/preparers to accept the tax e-filing system. Support

group is formed with an intention to exchange and share experiences. As to ensure its effectiveness, the relative group is initiated and led by professionals, or else exclusively run by peers. Generally, organization and peer supports are important for the success of the post-introduction of any new system. However, there are marked differently by tax agents/preparers group as to the required response on the perceived support needs. Tax agents/preparers pointed out that support is not needed. The results indicate that possibly the system implemented is not in the context of complex system. It is more likely to have a variety of features, intricate user interfaces as well as not required more domain of knowledge to operate. Hence, less likely users would rely on coworkers' or support groups' knowledge and skills to help in operate and use the system effectively.

On the whole, corporate tax agents/preparers in particular are more likely prefer to engage in the tax e-filing system. On top of that, the discussion on the technology acceptance is also applicable on other bodies of authority that change to technology application instead of manual system. For instance, the online banking system; the application of research grants; the redemption of shopping, credit card or petrol card points and many other application via technology usage. The motivation to accept the system introduce is supported with the function of the system itself. In general, if the system is perceived to ease of use; less effort required; reflection of more prestige, high profile as well as symbol of status; perceived behavioral control; and with attribute performance, then the system is perceived to have high value to use. Indirectly, it could improve the intention of tax agents/preparers or users in general to accept the tax e-filing

system or any system introduced in helping them to fulfill their task requirement. In fact, it could also reduce the burden of work or daily routine in filing the tax return on behalf of the corporate taxpayers. Generally, the time spends is reduced and task is performed efficiently. However, undeniable the design characteristic of the system itself is the main consideration in the acceptance. Indeed, the design of tax e-filing or any system introduced that take into account clear and consistency as well as understandable commands very much influenced the acceptance of the system introduce. Definitely, the fact of volume of transaction, user participation in job specification creation as well as training should not be ignored. These are the main elements in determining the tax e-filing acceptance among tax agents/preparers in Malaysia specifically and in determining the system usage as whole.

5.4 Implication to the theory

Theoretically there are several implications specifically to the UTAUT and TAM theories which underline in this research.

i- Extend the original UTAUT model to be applied in different contexts, *e.g.* taxation

As whole the original theories requires some modification to cater different angle or scope of study. Indeed, this research has given a new range of factors that influence the intention level of tax e-filing among tax agents/preparers. Hence, indirectly is value

added to the body of knowledge and improve the explanatory power to previous models. This research has added to the literature regarding UTAUT for particular areas, *e.g.* taxation. It is simply because to the knowledge of researcher, TAM is the popular theory to determine the intention or usage of technology even in the area of tax e-filing. As for the UTAUT theory, the standard and controlled moderators applied are age, gender, voluntariness and experience. Thus, this research introduces totally a new group of moderators, *i.e.* design characteristics, user participation, incentive alignment, training as well as organization and peer supports which are introduced in TAM3, in addition to the volume of transaction, which is considered the first attempt to develop a new UTAUT model to suit with the study.

ii- Able to identify the non significance / non influence moderators

In reviewing the results, it is noticeable that incentive alignment as well as organization and peer supports did not moderate the UTAUT constructs toward behavioral intention to accept the technology introduced. From this, it is concluded that those moderators do not influence an individual's intentions generally and tax agents/preparers specifically to accept technology when these individuals consider performance expectancy, effort expectancy, social influence, facilitating conditions and perceived value in relation to accepting the new technology. Indirectly, the non significance effect supports the technology development stage in Malaysia, which is at maturity stage. Indeed, the familiarity and technicality aspects of using technology are not a big concern to the tax agents/preparers in particular and to the user as whole.

iii- Treat the stable moderator as mediator in predicting behavioral intention in technology acceptability

Referring to the design characteristic that is successfully moderated almost all the constructs towards behavioral intention; it is a need for some change. The construct should be treated as mediating as it supports the theory-driven hypotheses as well as the non hypotheses constructs. In other words, design is the utmost element in the development of a system, which at least is created in such a form that eases, understandable and direct to the knowledge of user. In fact, bridging the gap between design characteristics and UTAUT's constructs could indirectly help in improving the Human-Computer Interaction (H-CI) (Al-Natour et al., 2006). The H-CI relationship is a kind of positive reinforcement, *i.e.* attraction towards another similar attributes that specifically focus on the role of rewards and punishment in attraction (Skinner, 1969). Thus, this theory of reinforcement could be considered and emphasized several aspects such as pleasure and enjoyable interactions as design characteristics in tax e-filing system. Indeed, the attraction toward technology, information or system with similarity or dissimilarity could be tested and treated as mediators for evaluative responses, *i.e.* attraction towards technology or ensuing similarity evaluations, in any design characteristics of a new system introduced.

iv- Enrich the literature on the importance of volume of transaction

Another important finding of this research is on the role of volume of transaction. This research somehow try to support the element of volume in taxation point of view is

successfully achieved its purpose. Empirically, the research's finding indicates that tax e-filing intention does influence by the number of clients. Undeniable, the perceived value that tax agents/preparers expect from tax e-filing, *i.e.* save time, effort and cost, has encouraged them to accept the system. However, further study should be carried out to strongly support the difference behavioral intention between low and high volume of transaction. This is basically due to differences in significance level achieved between the two (2) groups especially in low group of volume. As expected, the performance expectancy, effort expectancy, social influence, facilitating conditions and perceived value factors is definitely influenced the intention of tax agents/preparers with large number of clients. However, in considering effort expectancy, the tax agents/preparers with low group of clients refused to accept the tax e-filing.

v- Identify the most important factor in technology behavioral intention

The moderation effects could not be ignored as those constructs do have a significance role in the direct relationship. In the case of user participation for instance, even though performance expectancy is the only construct that influenced with this interaction, it appears to give the highest impact on behavioral intention. Ultimately, it means that in any system implementation, pre- and post-participation among the user is essential in ensuring the system is user-friendly as well as applicable in task performance. Indeed, clarification of the system is successfully ensured the development process and takes into consideration not only the initiators but also the users' intentions.

vi- Support the willingness / motivation to accept the system

Accordingly, this research proposed a new revised model on behavioral intention towards tax e-filing among tax agents/preparers that take into account the modification as in Figure 5.1. Basically the intention or willingness to accept tax e-filing is drive from the factors or expectation of the system performance, effort need to put forward and social influence from surrounding, friends, other users as well as team members. These factors are also successfully moderated or influenced by the effects of volume of transaction, the system design, user participation during pre- and post- implementation and also training. In terms of facilitating conditions or organization and technicality supports, it could only motivate behavioral intention if design characteristic and volume of transaction are considered. As for the perceived value, considering the volume of transaction or number of client, the value of the system implemented is viewed as importance and high.

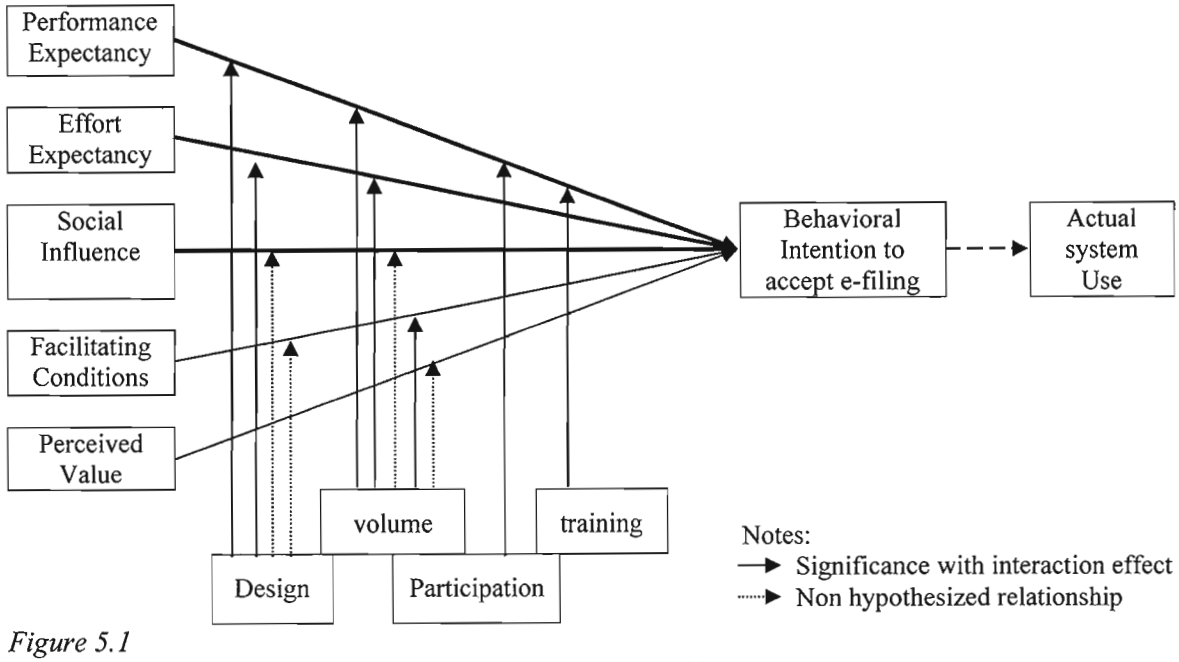

Figure 5.1
Proposed revised model of behavioral intention on tax e-filing acceptance

Based on the finding of this research, it is concluded that UTAUT is not a conclusive theory. The theory needs to be modified and extended accordingly to the behavioral intention of new system acceptance. In fact, there is no universal theory that could fit to every organization system. Indeed, there is a need to form a concept that more accurate and effectively explained the behavioral intention particularly on tax e-filing among tax agents/preparers in Malaysia and technology acceptance in general. This is basically to ensure the compliance of user on technology usage is achieving the desired target of the introduction of the system.

5.5 Implication to the management

In terms of applicability of this research's findings, there is information that is beneficial to policy makers, regardless of the statistical significance that is revealed.

i- Focus on the importance of the system performance and effort required

Performance and effort expectancy both are significantly related to intentions to accept technology. Therefore, policy makers and in particular the Inland Revenue Board of Malaysia (IRBM), Malaysian government or organizations could take note on the importance of the values that users perceive as to the extent of performance and effort required in order to use the technology. In particular, the aspects of usefulness, ease of use as well as complexity of the system introduced. Those aspects could be as a guideline for future before any introduction of technology for public usage. This simply means that

if users could see the system introduce as helpful in performing tasks, simplified the existing workload, require less effort in learning and handling the new system as well as easy to apply the system, definitely any new introduce system is most likely to be chosen.

ii- Consider the essential of infrastructure and technical facilities

Organizational leaders in the organization should consider the facilitating conditions aspect and ensure that the resources needed in order to successfully use the new technology are implemented. Even though, the effect towards behavioral intention among tax agents/preparers is none, but the groundwork in preparing the platform is essential for usage in the future. Despite the infrastructure and technicality of the facilities equipped in an organization, the intention is influenced by the number of clients engaged in tax e-filing. Therefore, the aspect of appropriate facilities in supporting the system such as computers, server, back up support and other technical equipment should be prepared and provided in the organization. In fact, the acceptability toward the system is influenced by the facilities indirectly, which means adequate infrastructure is essentially required.

iii- Familiar with the technology / system introduced

Organizations leader of taxation filing teams in particular are highly recommended knowing very well about the technology acceptance within organizations. It is important for the whole organization including the tax filing teams alike in decision making which could build up a confidence level in the implementation of technology both from a financial and performance wise. This is indeed, to ensure the purpose of the system

introduce is not defeated, *i.e.* does not supply any cost benefit and does not improve performance. Hence, identifying the extent to which the UTAUT model fully encompasses the technology acceptance process is valuable as it delineates the boundary conditions in which the UTAUT could be used and generalized within research and business contexts.

iv- Focus on the potential dimension to influence acceptability

The results of this research more a less could guide practitioners in Malaysia to focus on certain dimension that potentially influence tax agents/preparers' intentions to use the system. Even though the perceived value in terms of attribute performance is not given any significance effect on intentions to use, but this suggests that emphasized is more on advantages of such systems and how it could improve an individual's productivity. This is the most effective message to convey in increasing the acceptance or adoption level among users.

v- Change the system application to a mandatory basis

Policy maker, *i.e.* IRBM could encourage the tax agents/preparers to fully accept the tax e-filing by making the system as a mandatory basis. This is simply because on the whole, tax agents/preparers are actually accepting the system as long as could improve their task performance, which required less effort to engage. Indirectly, the system is perceived as having high values in terms of time, effort and cost saving. That is why even without any form of incentives and supports, the tax e-filing system is increasing in acceptability from

years to years and almost achieved 76 per cent in year 2013. Furthermore, as reported almost 99 per cent of the corporate taxpayers were assisted by the tax agents/preparers where the technicality aspect in tax e-filing is not a big issue. Thus, making the e-filing system as a compulsory to corporate taxpayers in year ahead is not creating any problem as the willingness of tax agents/preparers in accepting the system is considered moderate.

vi- Design the system with more effective interactions

In terms of designing the new system before introducing, the information technology (IT) design should focus on the application which most probably could effectively interact with user's characteristics. The IT designer of IRBM or outsources designer could maintain the simple and interactive design that considered new forms of application such as speech act theory and decisional guidance. Via this form, the design of the new system would have a suggestive guidance, directive speech acts as well as assertive words. Hence, bridging the gap between design and user's characteristic, indirectly could help in improving the Human-Computer Interactions (H-CI). The design characteristics should be the important aspect to be considered in introducing any form of system as the decision to accept or reject any new system is based on the complexity of the system indirectly.

Low adoption and high underutilization of ITs have been a major problem for policy makers and government of Malaysia in general in terms of realizing the benefits of IT implementation. Thus, there is a need of one (1) conclusive model which could develop a

rich understanding of the determinants of technology adoption and usage as well as considering the moderations. Indeed, owner of firms engaged in tax, managers or tax team leaders could proactively decide on implementing the right decision to minimize the resistance to new technologies and maximize effective utilization of ITs. In general, all parties related to the introduction of any system or technology could consider the above few implications as well as take into account the important aspects prior any system implementation. This is basically to ensure high compliance among the users could be achieved once introduced and indirectly be able to achieve the target Vision 2020 to become a fully developed nation. Therefore, in supporting the new system introduces, the necessary preparation should be carried out prior the implementation *i.e.* adequate series of training or compatible infrastructure setting up.

5.6 Limitation of the study

There are few limitations in this study as follows:

1. The coverage of tax agents/preparers in Malaysia is limited to the registered tax agents/preparers as the non-registered is not recognized by the IRBM. The detail particulars are obtained from the website of IRBM in year 2010 at the point of data collection period.
2. The analysis of the result based on the self-reported feedback from selected registered tax agents/preparers in Malaysia and interviews limited to selected tax agents/preparers in Kedah and Selangor states (for pilot test purposes) only.

3. The open-ended questions failed to be reported due to no responds given on this particular part. As for the results, the third objective is solely based on the responds given on the structured questions.
4. The respondent rate which is considered as low (*i.e.* 32%) is suspected to have affected the results. Indeed, the moderate power of explained on the direct relationship (52.6%) and the decreasing effects from the moderation reflected in the results indirectly.
5. The issue of low tax e-filing acceptability among tax agents/preparers is referring to the percentage of e-filing user in year 2009 which is less than 20 per cent at the point of this research conducted. However the percentage had increased over the year and achieves almost 76 per cent in year 2013. Indeed, it is considered as unsatisfactory as at the last phase of Vision 2020, the tax e-filing should be fully accepted.

5.7 Future research recommendation

This research indirectly enhances and improves the body of knowledge on behavioral intention as well as on the theory as whole. However, there are still rooms for improvement and gap to be covered that could be taking care in future research perhaps. Several suggested future research ideas and paths are listed below:

i- Several similar researches need to be conducted in difference field or scope, *i.e.* other e-government application in order to test and re-test the new introduces moderating constructs. This is due to the robustness of UTAUT theory applying

the same establishes and control moderators, *i.e.* age, experience, gender and voluntariness. The testing is needed to achieve and derive at the standard R^2 value which is 70 per cent with the recognize moderators compared to new introduce moderators.

ii- The sample size needs to be increase and achieve in collecting data. This is important in order to accomplish a common power level of 0.80 at the desire alpha levels of at least 0.05 for consistency in the results. More stringent significance levels (e.g. 0.01 instead of 0.05) require large samples to achieve the desired power level. Conversely, power could be increased by choosing a less stringent alpha level (e.g. 0.10 instead of 0.05). However, the significance level of 0.10 is not preferable as it could lead to wrong decision making.

iii- The present research is conducted via questionnaire survey and the response rate is considered low as compared to the reported respondent rate achieved in previous UTAUT researches. Therefore, it is suggested that other form of research, *i.e.* interview, qualitative or case study method of research is conducted in future. The aim is to possibly collect more data and derived at desire level of sample sizes, effect sizes and power of statistical tests.

iv- This research could be further testing the usage level. Currently, the research is conducted to study on the behavioral intention of e-filing among the tax agents/preparers, which the results has determined several factors affected the behavioral intention. However, the lower usage of e-filing among the corporate taxation remained unanswered. This behavioral intention level could be the

stepping stone in future research on usage level of e-filing among tax agents/preparers in Malaysia in particular on the corporate taxation.

v- Accordingly, the same area of research could be applied and study on different unit of analysis or sample, *i.e.* clients/corporate taxpayers. This is purposely to gather view or study on behavioral intention from the point of view of the corporate taxpayers themselves. It is believed that the different view or perspective results in different expectation.

vi- Interestingly this research indirectly support that the design characteristic could be treated as mediating instead of moderating construct. The constant result of significance level achieved in this construct proved that design is important and essential in any technology introduce. In fact, design is the first factor to be taken care in creating any form of technology applications in Malaysia.

vii- Relatively to design characteristics, the role of user involvement or participation could be determine as a mediator on the relationship of design and perceived effectiveness of e-filing adoption. This could be undertaken within the guidelines set by Baron and Kenny (1986) via Sobel Test (Sobel, 1988) in testing the magnitude of the indirect effect. This constructs are researchable as they appear to be significant and moderate the direct relationship in this research.

viii- The volume of transaction factor needs to be emphasized and focus as one (1) of moderating factor and test or include in any study related to new technology introduce. This is due to its contribution that possibly plays some role in decision

making in choosing any technology application. However, this factor is rarely test and in reality not much reference on this construct.

5.8 Conclusion

E-government is definitely a new paradigm for serving tomorrow, pushing boundaries and enhancing foundation. The aims of increasing the accessibility spend and transparency of government services through communication technology could not be taken lightly. There is a real challenge for tax authorities to assure the functionality of tax to determine the success for implementing e-government effectively and efficiently by year 2020.

The main contribution of this research is to gain understanding on the gap existed in the e-filing among the tax agents/preparers. Indirectly, this research is contributing to the body of knowledge empirically. The existing information system theory is tested in a new IT context, *i.e.* tax e-filing. The extension or enhancement is certainly assisted in understanding the determinant of e-filing acceptability. Moreover, the management policy such as government policy makers, government agencies and system designers also could be benefited. The result and discussion provide is empirically support the reasons behind the low/unsatisfactory acceptability or resistant to accept the technology introduced. The answer for the resistant indirectly could help the authorities in achieving the Malaysian government transformation as well as the public sector information

communication technology (ICT) strategic plans especially on taxation. This study support the previous studies where all four (4) main UTAUT constructs with additional construct of perceived value are the determinants of behavioral intention towards an acceptability of tax e-filing among tax agents/preparers in Malaysia. Indeed, design characteristic play an important and constant role in giving an interaction effect on the direct relationships of facilitating conditions and perceive value constructs. This indirectly shows that in initiating any form of technology application or system, design characteristic and number of clients or volume of transaction involvement should not be ignored. Even though the predictive ability of the model decreases once the moderating variables are considered, still it is empirically illustrated the determinants of tax e-filing among tax agents/preparers in Malaysia. Collectively this could guide for future system design related to tax filing in particular and any other system in general, which initiated purposely to assist towards 'zero' face-to-face service delivery; paperless system; and inculcating information sharing services among tax payers in Malaysia.

Obviously, the results support that UTAUT is not a conclusive theory. It is require for some modification or extension to suit with the intention behavior and condition of a specific system introduce. This perhaps support the contingency theory where no universal theory of organization system which accordingly could fit to every organization. Therefore, designers should check on surrounding or system requirement of all levels instead, before produce any new system to be implemented. This is important in ensuring the desired level of compliance among users is achieved once the system is

implemented. Conceptually, the determinants of tax e-filing among tax agents/preparers could contribute to the improvement of understanding on behavioral intention referring to UTAUT theory. Practically, this research could produce answer on the factors that perhaps influence the behavioral intention on the tax e-filing acceptability. Thus, any form or context of behavioral intention, *i.e.* taxation, technology, information system or many more area of studies in general could be as the basis in future research enhancement.

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