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Factors Influencing Tax-Payer Information Usage Behavior: Test of An Integrated Model[1]

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Abstract

This study explores the key factors of the electronic tax filing system (EFS) from the behavioral perspectives of the end users. Based on the Theory of Planned Behavior (TPB), this study examines the antecedents of information technology usage and proposes an integrated model for the empirical examination of the users' behavioral intentions for using EFS. The results show that perceived behavior control most significantly affects the end users' intentions for the EFS usage. In addition, users' overall satisfactions, specifically those explained by ease of use of the EFS also influence their intention to adopt the EFS. Discussions and policy recommendations for promoting the EFS are provided according to the empirical results.

Keywords: electronic government, electronic tax filing, theory of planned behavior, technology acceptance model

1. Introduction

Electronic filing is quick, easy, and far less prone to error than traditional paper returns. However, the integrated tax system itself is not popular or wildly used in many countries. For example, only 36% U.S. taxpayers filed electronically in 2002 (Everson, 2003), and the electronic filing rate is still way below the target expected by the US Congress[2]. Factors that have, to date, been identified and broadly discussed as important determinants of acceptance of EFS are: paperless, complexity to apply the GCA, information security, etc (United States General Accounting Office, 2001). For instance, feedback from the U.S. tax practitioner community indicated that making electronic filing paperless would significantly increase taxpayers' and tax practitioners' willingness to file electronically (Colwell, 2003). In addition, lack of proper promotion plans and free on-line tax preparation are also related to the acceptance of EFS (United States General Accounting Office, 2003). And table 1 shows the status quo of EFS usage in Taiwan.

Table 1.Summary of Tax-filing Statistics in Taiwan

Year	Hand-Writing	Two-Barcode	On-Line
1998	4,476,202 (99.59%)	8,055 (0.18%)	10,230 (0.23%)
1999	4,554,071 (97.73%)	93,966 (2.02%)	11,577 (0.25%)

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[2] Although the percentage of individual tax returns filed electronically reached an estimated 41 percent in 2003, the current rate of growth of e-filing will not allow IRS to achieve its long-term el-filing goal of 80 percent by 2007, which is provided by Restructuring and Reform Act of 1998.

2000	4,271,189 (86.94%)	629,996 (12.82%)	11,527 (0.23%)
2001	3,965,277 (78.89%)	1,023,429 (20.36%)	37,621 (0.75%)
2002	3,282,077 (71.24%)	976,557 (21.20%)	348,156 (7.56%)
2003	2,838,581 (56.53%)	1,427,046 (28.42%)	755,641 (15.05%)

Source: http://www.mofdpc.gov.tw/page1335.htm

Despite the spread of EFS in many countries, most studies have focused on the benefits for governments adopting using EFS, i.e., from government's perspectives, rather than focused on the acceptance of the new tax-filing technology from end users' perspective (Huang, 2000). From a pragmatic point of view, understanding the determinants of using IT should ensure an effective deployment of IT resources in an organization (Taylor and Todd, 1995). Thus, evaluating technology acceptance, especially from the behavioral perspectives of the EFS end users, has been critical for its promotion and strategic revision.

Among research on IT acceptance from the end users' attitude/behavior perspectives, models such as end-user computing satisfaction (EUCS) (Doll and Torkzadeh, 1988), the technology acceptance model (TAM) (Davis, 1989), and the theory of planned behavior (TPB) (Ajzen, 1985), have gained the attention of many researchers and are widely employed to provide an understanding of the determinant of technology usage (Benamati and Rajkumar, 2002; Klobas, 1995; Mathieson, 1991; Moon and Kim, 2001; Taylor and Todd, 1995; Venkatesh, Morris, and Ackerman, 2000). Although a wide variety of factors have been identified as influential in IT usage behavior, little is known about the relative influence of each of these factors on individual usage behavior, particularly, individual tax-filing. Therefore, our study seeks to better understand how these factors combine to influence people to adopt EFS.

2. A Behavioral Model for Evaluating EFS

Although TAM has been the most commonly employed model of IT usage and received considerable empirical support, the TPB, an extension of the Fishbein and Ajzen's (1975) theory of reasoned action, provides a fuller understanding of user intention and behavior and may provide more effective guidance to policy-makers in promoting the EFS (Taylor and Todd, 1995), and thus may be more suitable for our research. A central proposition of TPB, which has considerable empirical support (Ajzen and Fishbein, 1980; Armitage and Conner, 2001; Sheppard, Hartwick, and Warshaw, 1988; Ajzen, 2002), is that in the context of IT usage, an individual's behavior (*B*) for IT usage is determined by his or her behavioral intention (*BI*) to use the technology. That is, people tend to better adopt IT when they have more intention to use the IT. The *BI* for IT usage is then jointly determined by three conceptually distinct belief constructs: attitudes (*AT*) toward using the IT, subjective norm (*SN*), and perceived behavioral controls (*PBC*).

Based on the foundation of TPB, we propose a behavioral model for evaluating EFS usage. As detailed in Figure 1, the users' actual behavior (*B*) of using the EFS is determined by their behavioral intentions to use the system (*BI*), which in turn, is formed by (1) the attitude toward EFS (*AT*), which reflects an overall evaluation or satisfaction of the system; (2) subjective norms about EFS (*SN*), which reflect perceptions of social pressure affecting IT usage, such as pressures from supervisors and colleagues; and (3) perceived behavioral control (*PBC*), which reflects beliefs regarding control over factors that may facilitate or impede the performance of IT usage

(Ajzen 1991; Ajzen and Madden, 1986; Mathieson, 1991; Taylor and Todd, 1995).

In TPB, an individual's attitude towards specific behavior is proportional to the sum of salient beliefs about relevant attributes and perceived consequences of performing the behavior and the person's subjective evaluation of these attributes and consequences. That is, $A \propto \sum b_i e_i$, where bi is the belief that performing the behavior leads to consequences or an outcome i; ei the person's subjective evaluation of belief attribute and consequence i. For example, someone may believe that e-tax-filing will result in efficient tax returns (bi). If that consequence (ei) is positively evaluated, the belief and its corresponding evaluation will make someone's attitude toward e-tax-filing (ATr) more positive. Similarly, an individual's
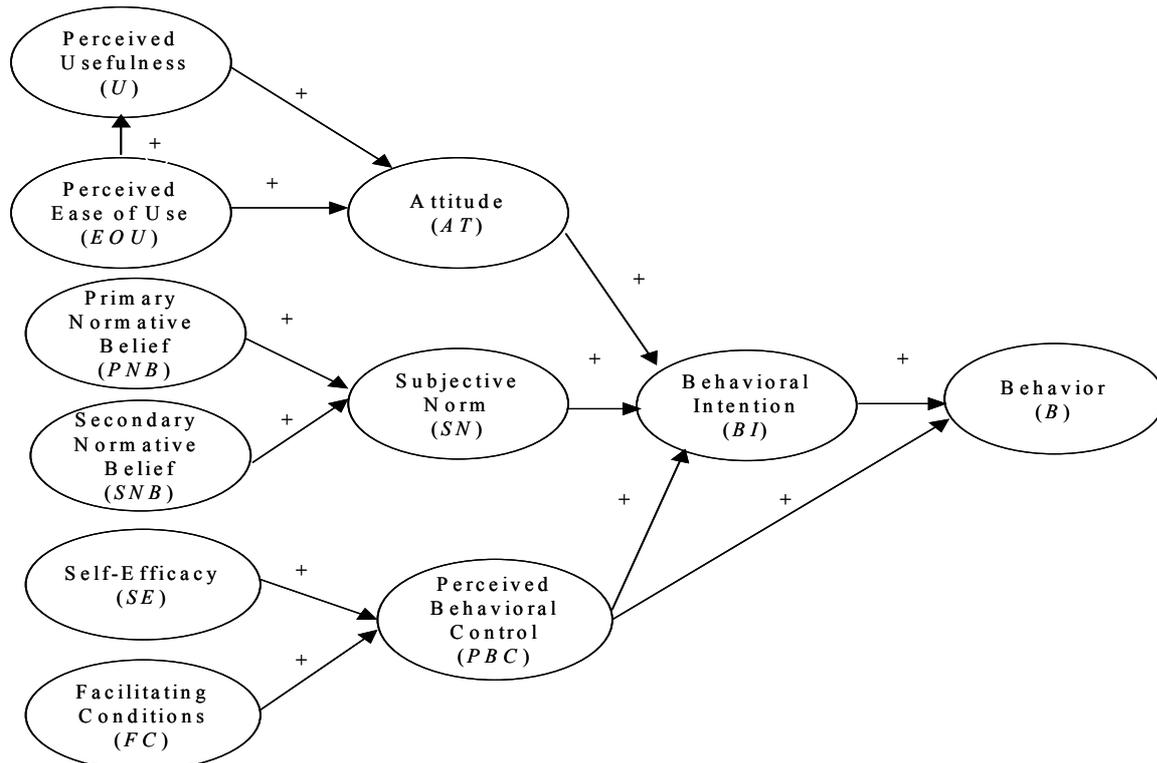

Figure 1: The Proposed Model for Evaluating the EFS

subjective norm is determined by normative beliefs (nbj) which salient social referents think he or she should perform in a particular behavior and by motivations to comply with those referents (mcj); and an individual's perceived behavioral control is determined by control beliefs (cbk) that reflect his or her perceived difficulty or ease in performing a particular task, and by the perceived facilitation (pfk) of the control factor.

Our theoretical approach is expanded to include constructs and relations that might be important in the context of IT usage. First, we take a decomposition approach3 to belief structures, which are treated as monolithic in the traditional TPB model (Bagozzi, 1981; Bagozzi and Hestherton, 1994; Shimp and Kavas, 1984). Accordingly, AT is determined jointly by perceived usefulness (U) and perceived ease of use (EOU) of the EFS, two

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3 A decomposition approach provides two advantages: (a) Gives a variety of dimensions consistently relating to the antecedents of intention, and (b) Provides a stable set of beliefs to be operated in various problem settings (Bagozzi, 1981; Mathieson, 1991; Taylor and Todd, 1995b)

powerful and parsimonious constructs in TAM[4] (Adams, Nelson, and Todd, 1992; Davis, 1989; Straub, 1989, Szajna, 1994), and *EOU* is a direct determinant of *U*. *SN*, consistent with prior literature (Mathieson, 1991; Taylor and Todd, 1995), is manifestly divided into *primary normative beliefs* (*PNB*), which include beliefs influenced by family and friends, and *secondary normative beliefs* (*SNB*), which include beliefs influenced by peers and supervisiors. *PBC*, according to discussion of *PBC* in literature (Ajzen 1991; Armitage and Conner, 2001; Compeau and Higgins, 1995; Taylor and Todd, 1995; Thompson, Higgins, and Howell, 1994; Trafimow, Sheeran, Conner, and Finlay, 2002), is divided into *self-efficacy* (*SE*), which reflects users' confidence in their knowledge and ability to master the EFS, and *facilitating conditions* (*FC*), which refers to the availability of resources necessary to perform the EFS. Second, according to Davis, Bagozzi, and Warshaw (1989), intentions to use IT may be based on anticipated job performance consequences of using the system, regardless of overall attitude. In other words, an individual may dislike the EFS, (i.e., have a negative attitude towards it), but still use the system because it is perceived to be useful in terms of tax-filing performance. Therefore, we assume a direct path from perceived usefulness to intention in our model. Stated more formally,

$$BI = w_1*AT + w_2*SN + w_3*PBC + w_4*U \qquad (1)$$
$$AT = w_5*U + w_6*EOU \qquad (2)$$
$$SN = w_7*PNB + w_8*SNB \qquad (3)$$
$$PBC = w_9*SE + w_{10}*FC \qquad (4)$$
$$U = w_{11}*EOU \qquad (5)$$

Based on the preceding theoretical arguments, the following hypotheses have been developed for further empirical examinations:

Hypotheses 1*a*-1*d*: Attitude (1*a*), subjective norm (1*b*), perceived behavioral control (1*c*), and perceived usefulness (1*d*) toward the EFS all have significant positive impact on the behavioral intention (*BI*) to use it.

Hypotheses 2*a*-2*b*: Attitude (*AT*) toward the EFS usage is a positive function of the users' perceived usefulness (2*a*) and perceived ease of use (2*b*). *U* and *EOU* are the beliefs that using the EFS will lead to different outcomes, multiplied by how positive or negative the outcomes are expected to be.

Hypotheses 2*c*-2*d*: A person's subjective norm toward the EFS is a positive function of *PNB* (2*c*) and *SNB* (2*d*). *PNB* and *SNB* are a person's normative beliefs concerning the influence of particular referents, multiplied by the motivation to comply with those referents.

Hypotheses 2*e*-2*g*: A users' perceived behavior control (*PBC*) towards EFS usage is a positive function of their self-efficacy (2*e*) and facilitating conditions (2*f*). *SE*, and *FC* are a person's beliefs that he or she can execute the behavior of personal income e-tax-filing, multiplied by the perceived facilitation.

Hypothesis 3*a*: The users' perceived usefulness of EFS is a positive function of their perceived ease of use of the system.

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[4] According to TAM, IT usage behavior is a direct function of attitude toward usage, and perceived usefulness, which reflects the belief that using the technology will enhance performance. Attitude is determined by perceived usefulness and perceived ease of use (Davis, 1989).

3. Research design

3.1 Instrument Development

Table 2 shows the detailed constructs in the proposed EFS usage model. To ensure the content validity of the scales, the items selected must represent the concepts in the empirical model under investigation. Therefore, the items selected for the constructs in our model are mainly adapted from prior studies to ensure content validity.

Table 2. EFS Users' Evaluations on Individual Questionnaire Items

Factors	Constructs	Code Name	Questions [a]
Attitudinal Structure	AT	Y_1	Using the EFS is (very bad/very good)
		Y_2	It is (very unpleasant/very pleasant) for me to use the EFS.
		Y_3	It is (very useless/very useful) for me to use the EFS.
		Y_4	I (extremely dislike/extremely like) to use the EFS.
	U	X_1	The EFS helps me complete the tax-filing tasks quickly.
		X_2	The EFS enhances efficiency of tax-filing work.
		X_3	The EFS makes tax-filing work much easier.
		X_4	Overall, the EFS is very helpful.
	EOU	X_5	The EFS instruction is very easy to understand.
		X_6	It is very easy to learn how to use the EFS.
		X_7	In general, the ease of use of EFS is very good.
Normative Structure	SN	Y_5	People who influence my decisions (strongly oppose/strongly support) my using the EFS.
		Y_6	People who are important to me think that I should use the EFS (strongly disagree/strongly agree).
	PNB	X_8	My friends think that I should use the EFS.
		X_9	My family thinks that I should use the EFS.
	SNB	X_{10}	My colleagues think that I should use the EFS.
		X_{11}	My supervisor thinks that I should use the EFS.
Control Structure	PBC	Y_7	When I use the EFS, I have (no/a lot of) difficulties.
		Y_8	Whether or not I use the EFS is completely within my own control (strongly disagree/strongly agree).
		Y_9	I have enough knowledge to operate the EFS (strongly disagree/strongly agree).
	SE	X_{12}	I have enough ability to use the EFS.
		X_{13}	I have enough knowledge to use the EFS.
		X_{14}	The EFS is easy to use on my own.
	FC	X_{15}	I own enough hardware to use the EFS.
		X_{16}	I own enough software to use the EFS.

		X_{17}	I could download and install the EFS on my own
Behavioral Structure	BI	Y_{10}	I intend to use the EFS (never/at every opportunity) to file my tax next year.
		Y_{11}	I plan to use the EFS to complete the tax-filing tasks (never/very likely).
		Y_{12}	In general, I intend to use the EFS (never/very likely).

[a] Questions $X_1 \sim X_{17}$ and $Y_1 \sim Y_{12}$ are coded as 7-point Likert Scale from -3 (strongly disagree) to $+3$ (strongly agree).

The questionnaire includes two major parts. The first part is composed of twenty-nine relevant questions (X_1-X_{17} and Y_1-Y_{12}) as shown in Table 2. The answers for all questions in the first part are coded as 7-point Likert Scale from -3 (strongly disagree) to $+3$ (strongly agree). The second part contains demographic information about the respondents, including age, gender, education, and years of experience in processing the tax-filling affairs. Items X_1-X_{17} in Table 2 stand for the independent variables that measure the theoretical constructs serving as predictors of the EFS usage in Figure 1. They include items for perceived usefulness (U, X_1-X_4), perceived ease of use (EOU, X_5-X_7), primary normative belief (PNB, X_8-X_9), secondary normative belief (SNB, X_{10}-X_{11}), self-efficacy (SE, X_{12}-X_{14}), and facilitating conditions (FC, X_{15}-X_{17}). There are another twelve observable variables (Y_1-Y_{12}) for intermediate and ultimate dependent constructs including attitude (AT, Y_1-Y_4), subjective norm (SN, Y_5-Y_6), perceived behavioral control (PBC, Y_7-Y_9), and behavioral intention (BI, Y_{10}-Y_{12}).

3.2 Setting and the Survey

Approximately 230 questionnaires attached with gifts were distributed to life insurance clerks[5] and collected with the help of five trained interviewers. Of these, 200 were returned, yielding a response rate of 84.7%. The mean age of the respondents was 35. Sixty-five percent of the respondents had experience in using computers and were generally better educated than most adults locally, with 62% of the respondents having completed college or higher degrees. The overall characteristics of the surveyed EFS users, therefore, have a sound background for adopting EFS in terms of their education, work experience, and training background.

4. Result

4.1. Evaluations for the Current EFS Usage

Behavioral Factor

Although it is plausible that the actual EFS usage is far less prominent than the users' intention, it can be expected that citizens might keep using EFS after they try it successfully at the first time. Thus, the EFS has been made available but yet to be promoted further. The success for promoting the EFS depends on the convenience of getting the certificate of identification, the usefulness of on-line tax information, the accompanying payment mechanism, etc.

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[5] The clerks completed training provided by their companies on notebook computer operation for their life insurance businesses. They can use EFS to help their customers resolve tax-filing problems.

Attitudinal Factors

The dependent measures of the attitudinal constructs (AT, $Y_1 - Y_4$) stand for the overall satisfaction for the EFS usage. As a result, the EFS users generally reported positive experience from 82% to 86.5% and a maximum of 2.5% dissatisfaction. This overall positive evaluation is also captured by two subsequent attitudinal constructs on perceived usefulness (U, $X_1 - X_4$) and perceived ease of use (EOU, $X_5 - X_7$). The least satisfaction of the EFS usage points to financial benefits of completing tax-filing affairs (X_1, 52.5%), which should shed light on where the improvement efforts and resources should be allocated.

Normative Factors

The respondents indicated more support from their supervisors and colleagues (SNB, $X_{10} - X_{11}$) than friends and family (PNB, $X_8 - X_9$) to use the EFS. The results on the normative factors imply that using EFS is consistent with the organizational and social settings around the EFS users. It also means that the government's plan and investment on the e-filing and the overall e-government programs have received corresponding support from private firms outside.

Control Factors

The least satisfaction of the EFS usage points to self-efficacy construct (SE, $X_{12} - X_{14}$) among control factors, which should shed light on where the improvement efforts and resources should be allocated. For example, 19.5% of the EFS users replied that they had not enough ability in using the system. Around 12% of the users reported that they did not have sufficient knowledge to use the EFS; and 11.5% disagreed with ease to use on their own.

4.2 Quality of the Original and Revised Model

The integrated tax e-filing model was tested by structural equation modeling (SEM) using LISREL8 with maximum likelihood estimation. The results of the first confirmatory factor analysis indicated an acceptable fit for the model, and a high degree of scale reliability and convergent validity, except for the scales of perceived usefulness and facilitating conditions, which had lower than desirable internal consistencies (0.6). Based on the results of confirmatory factor analysis, the path coefficients of questionnaire items X_1 (I will not get benefits from using this electronic system), and X_{14} (I can operate it on my own) in Table 2 are very small and insignificant, and thus dropped. Then we conducted the second confirmatory factor analysis on this revised model and assessed its scale reliability, convergent validity, and model fitting.

Path coefficients, standard errors, and their significance for the integrated model are shown in Figure 2. The results suggested an acceptable fit for our revised model [χ^2 (304, N = 200) = 511.10, p = 0.00; GFI = 0.85, CFI = 0.96; NNFI = 0.95; AGFI = 0.80; RMSEA = 0.059][6]. The R^2 values for behavioral intention, attitude, subjective norm, perceived behavioral control and perceived usefulness are acceptable (R^2_{BI} = 0.45; R^2_{AT} = 0.26; R^2_{SN} = 0.34; R^2_{PBC} = 0.30; R^2_{U} = 0.68). Based on these criteria, our integrated model in Figure 2 is acceptable, and can be used to examine the hypothesized relationships among the variables.

4.3 Results for Regression Model Testing

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[6] Acceptable model fits are indicated by values of: AGFI exceeding 0.8, though clearly higher values are preferable, both CFI and NNFI exceeding 0.9, RMSEA with values lower than 0.08 suggestive of reasonable fit.

As indicated in Figure 2, all path coefficients in the integrated model are significant, with the exception of three paths, one from perceived usefulness (*U*) to behavioral intention (*BI*), another from perceived usefulness (*U*) to attitude (*AT*), and the other from primary normative belief (*PNB*) to subjective norm (*SN*).

Determinants of EFS Behavioral Intention

As shown in Figure 2, perceived behavioral control, attitude, and subjective norm positively affected tax-filing behavioral intention based on their standardized path coefficients (0.46, 0.33, and 0.16 respectively). Thus, hypotheses 1a-1c were clearly supported, and hypothesis 1d was not. This suggests that to improve e-filing intention, policy-makers in Taiwan should not only provide mechanisms to influence perceived behavioral control but to attitude and subjective norm of the EFS in general.

Table 3 summarizes the total effects of all constructs in the model on the behavioral intention of EFS. As shown, the users' perceived behavioral control (total effect 0.46) has the most prominent impact on their intention to use the EFS, however, perceived usefulness, primary and secondary normative belief have no significant impact on taxpayers' behavioral intention.

This finding is not consistent with Taylor and Todd's (1995a) result that intention is the most strongly determined by attitude, whereas the influence of subjective norm and perceived behavior control are relatively weaker in their model. A possible interpretation of this might be that unlike Taylor and Todd's study, which explored a common IT usage in a school computer resource center, our research explored a newly developed tax e-filing system, which deals with individual privacy and security concerns and requires certain tax knowledge.

Determinants of EFS Users Satisfaction

As a result, the ease of use (EOU) provided by the EFS has indeed significant impact on the overall satisfaction as hypothesized in the Equation 2, with the path coefficients 0.41. However, the perceived usefulness does not reach substantial direct influence on the users' satisfaction with the path coefficient 0.12. So, we reject hypothesis 2a and accept hypothesis 2b. In addition, EOU has a significant impact on the users' perceived usefulness of EFS, with the path coefficient 0.83. The results suggest that the friendly interface of the EFS has a greater influence on attitudes towards e-filing than the benefits of perceived usefulness have.

The finding is inconsistent with some previous research results (Taylor and Todd, 1995) showing that attitude is strongly determined by perceived usefulness in either the TAM or Decomposed TPB models, whereas the influence of ease of use is relatively weaker in their Decompose TPB models. A possible interpretation of this might be that e-filing is means in IT adoption (Gefen and Straub, 2000).
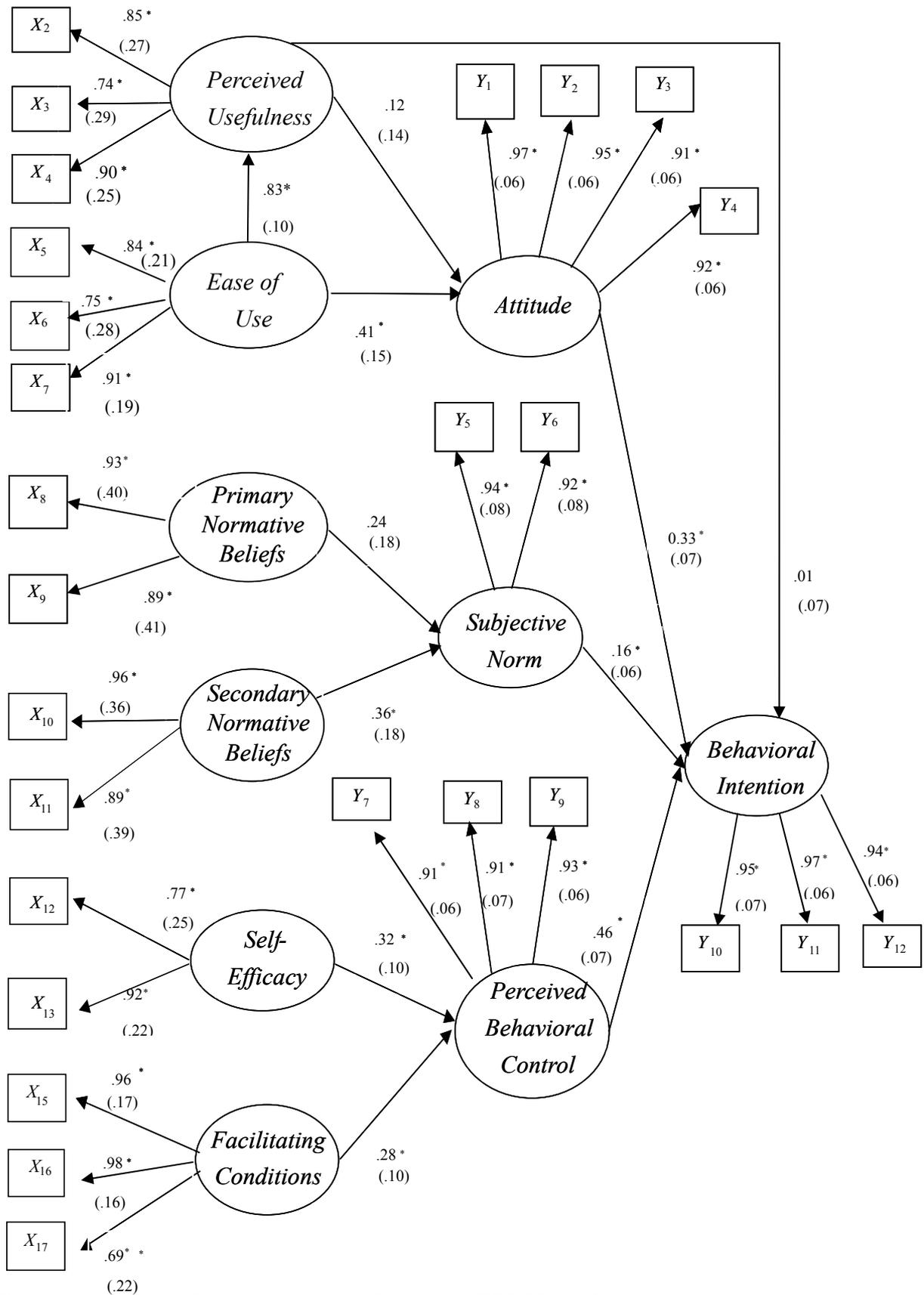
Figure 2: The Path Coefficients of the Integrated EFS Usage Model

Table 3. *Summary of Measurement Scales and total Effects on BI* (N = 200)

Measure	# Items	Internal Consistency	Variance Extracted	Effects on *BI*
BI[a]	3	0.97	0.9	NA
AT[b]	4	0.97	0.88	0.33*
SN[b]	2	0.93	0.87	0.16*
PBC[b]	3	0.94	0.84	0.46*
PU[c]	3	0.86	0.68	0.05
EU[c]	3	0.86	0.68	0.18*
PNB[d]	2	0.91	0.84	0.04
SNB[d]	2	0.94	0.88	0.06
SE[c]	2	0.83	0.71	0.15*
FC[c]	3	0.91	0.77	0.13*

[a] Scaled from -3 to +3；[b] Scaled from -3 to +3；[c] Scaled from -9 to +9: PU_r , PC_r and EU_r are directly proportional to $\Sigma b_i e_i$, where b_i and e_i are scaled from -3 to +3. Similarly, SE_r and FC_r are directly proportional to $\Sigma cb_k pf_k$, where cb_k and pf_k are scaled from -3 to +3；[d] Scaled from -21 to +21: II_r and OI_r are directly proportional to $\Sigma nb_j mc_j$, where nb_j are scaled from -3 to +3, and mc_j are scaled from 1 to 7.

IT behavior, however, is somewhat ends-oriented and task-oriented in the previous research[7]. On the contrary, e-filing in Taiwan is not the only solution to tax-filing, but one substitution means among two or three tax-filing options. Thus, e-filing behavior puts more stress on ease of use than usefulness, which means e-filing software needs flexibility and clarity than task orientation like efficiency and effectiveness.

Determinants of Subjective Norms
Secondary normative beliefs, which were modeled as beliefs affected by colleagues and supervisor, significantly influenced the subjective norm (with the path coefficient 0.36), whereas primary normative beliefs did not (with the path coefficient 0.24). That is, R^2_{SN} is accounted by the significant effect from SNB to subjective norm, and hypothesis 2c was not supported.

Determinants of Perceived Behavioral Control
Both self-efficacy and facilitating conditions were determinants of perceived behavioral control and the influence of facilitating conditions appears to be somewhat weaker than that of self-efficacy, suggesting that even with friendly software and hardware support, e-filing taxpayers need more operation confidence and experience.

5. Policy Implications

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[7] In Taylor and Todd's (1995) research, students were asked to finish assignments on computers.

5.1 Promoting Perceived Behavioral Control and Attitude

As shown in Table 3, the EFS usage behavioral intention is most strongly determined by the users' perceived behavioral control and attitude toward EFS. The important role of attitude confirms the bottom line of any successful and satisfactory information system. A possible interpretation of the significant effect of *PBC* might be that our research was conducted in 2002, when electronic tax-filing programs were not well established and participation rates were still low. In that setting, people might be more influenced by perceived behavioral control to form their intentions. In addition, local citizens may be lack of knowledge of knowledge of electronic tax-filing, unfamiliar with the requirement of a pre-applied electronic certificate of identification, and even impatient with time-consuming GCA application process. Furthermore, the traditional paper-work tax-filing remains functioning, which means the potential EFS users have alternatives when they file their income taxes. This competing behavioral intention between using the original paperwork and the EFS may lead to less willingness to try the alternative EFS. Such resistance to change may also cause the users to emphasize the control information in the formation of the EFS usage.

These results suggest that to improve electronic tax-filing behaviors, policy-makers in Taiwan should focus on not only mechanisms to influence perceived behavioral control, but also mechanisms to influence attitude in general since the "buy in" of a new technological application such as the EES caused by one's own attitude may be more sustainable.

5.2 Critical Roles of Perceived Ease of Use, Self-efficacy and Facilitating Conditions

Total effects of the fundamental level of constructs, including perceived ease of use, self-efficacy, and facilitating conditions, on the EFS behavioral intention are reported in Table 3. This first suggests that extensive consultation with users about improvements to the customer interface with PAYE and e-filing services, and extensive involvement in early testing with software providers such as payroll bureau and planning services may be necessary. Moreover, programs stressing (1) friendly user interface of EFS via mass media, and e-filing knowledge via hardware support (internet download service or tax-filing CDs distribution) and software support (detailed operating procedure and easy operation interface) as part of public policy efforts to promote EFS usage may be effective.

In addition, policymakers should constantly devote efforts at all educational levels to teach people why to file their taxes electronically and how because this kind of knowledge would influence their EFS usage. Moreover, various educational efforts should be made at different stages of the EFS programs. For example, at the preparation stage, advertising via local mass media is necessary to inform people how to get the electronic certificates; seminars on EFS should be provided to community at the implementation stage, etc.

5.3 Limitations and Future Research Directions

This research was conducted to better understand taxpayers' e-filing behavior. This research does have certain significant strengths, such as the use of an integrated model, and the use of division of belief structures; in addition, the research results support the efficacy of our integrated model as a framework for understanding IT usage. However, some refinements to the model and to the methodology may improve its theoretical value and practical utility.

First, the most significant limitation is the absence of behavior measures from the sample. However, this concern is somewhat mitigated because previous IT studies have shown significant relationships between behavioral intention and behavior (Davis, 1989; Taylor and Todd, 1995a). Furthermore, the strong relationship has been well-established in social

psychology literature, e.g., Sheppard, Hartwick, and Warshaw (1988) and Armitage, and Conner, (2001). Also, this relationship has been observed in a variety of socially desirable, politically correct, and personally sensitive behaviors, such as environmental behavior, donating blood, using birth control, etc. Thus, the absence of behavior measures is an important, but not a critical, limitation to this study.

Second, the relative importance of perceived usefulness and perceived ease of use in IT adoption has not been concluded, and suggests more worthwhile exploration. Third, although efforts were made to solicit a wide variety of respondents, the study was limited by its sample size due to the problem of limited EFS users. Further studies with a large sample size are necessary to assess the generalizability of these research results. Finally, it is clear that additional investigation is required to better understand the impact of information security on EFS usage–which is not included in our model.

Third, the study gathered the samples only from life insurance clerks those who stand for the insured on EFS usage. This inappropriate sampling frame may result in bias in the inference.

5.4 Conclusions

In this paper we have developed an integrated tax e-filing model, and have suggested that dividing the beliefs structures in the TPB into multidimensional constructs might improve our understanding of the relationships among the antecedents of the behavioral intention. We have identified a number of factors that determine tax e-filing behavior intension with the integrated model. Listed in a descending order, perceived behavior control, attitude, ease of use, subjective norm, self-efficacy, and facilitating conditions, all have significant influence on tax e-filing behavior intention, perceived usefulness. Overall, these results suggest that, as expected, the integrated model provides insights into the determinants of IT usage. Furthermore, based on our research results, we provide policymakers with specific suggestions on ways to influence recycling behavior.

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