Predicting consumer intentions to shop online: An empirical test of competing theories

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Abstract

The proliferation of commercial Web sites providing consumers with a new medium to purchase products and services has increased the importance of understanding the determinants of consumer intentions to shop online. This study compared the technology acceptance model and two variations of the theory of planned behavior to examine which model best helps to predict consumer intentions to shop online. Data were gathered from 297 Taiwanese customers of online bookstores, and structural equation modeling was used to compare the three models in terms of overall model fit, explanatory power and path significance. Decomposing the belief structures in the theory of planned behavior moderately increased explanatory power for behavioral intention. The results also indicate that the decomposed theory of planned behavior provides an improved method of predicting consumer intentions to shop online. Finally, the implications of this study are discussed.

1. Introduction

Business-to-consumer electronic commerce (B2C e-commerce) provides an effective method for online retailers and their consumers to perform online transactions through commercial Web sites [1]. Although consumers have realized the benefits of online shopping, such as saving time and energy, convenience, competitive pricing, broader selection, and greater access to information [2], consumers are sometimes unwilling to shop online because the limited Web interface hampers their judgment of retailer honesty compared to face-to-face interaction [3]. Moreover, in order to develop an effective Web site to facilitate online transactions and services, it is important to understand consumer decisions regarding the use of online shopping. The issues that influence this decision are likely to vary with the Web sites, the individual, and the context. If these issues can be identified, online retailers can consider them during Web site implementation.

Recent research has provided more insight into user acceptance of Internet services [4]. For example, intention-based models, including the technology acceptance model (TAM) [5,6], the theory of planned behavior (TPB) [7,8], and the decomposed TPB model [9], have used to understand the determinants of consumer intentions to use Internet services [10–15]. Three intention-based models are compared in two respects. First, the TAM is based on the Fishbein and Ajzen’s [16] theory of reasoned action (TRA), which indicates that social behaviors are motivated by individual attitudes, and are specifically designed to predict information system (IS) use [5,6]. TPB extended the TRA to explain behavioral conditions not entirely under volitional control [7,8]. The decomposed TPB model deconstructs belief structure of TPB into several factors [9]. Second, the antecedents of user acceptance, perceived usefulness and perceived ease of use are presented by fundamental salient beliefs comprising the TAM [5]. TPB stresses...
the influence of attitude, subjective norms, and perceived behavioral control beliefs on behavioral intention and actual usage [7,8]. The decomposed TPB model focuses on identifying various belief factors that influence three determinants of intention (such as attitude, subjective norms, and perceived behavioral control). Taylor and Todd [9] contended that decomposition of beliefs sets more completely identify understanding and managerially relevant factors.

The theory of comparison approach provides a helpful method of predicting information technology (IT) usage behavior and intention, while the individual theoretical models have their own distinct advantages. For example, Chau and Hu [17] found that TAM to be superior to TPB in its ability to examine physician acceptance of telemedicine technology. Analysis of buyer behavioral intentions in the context of electronic procurement provides another example. Moreover, Gentry and Calantone [18] recommended TAM as superior to the TRA and TPB models in its ability to predict buyer behavioral intentions. Another example has demonstrated that the three models (TAM, TPB, and decomposed TPB model) are roughly equivalent in terms of their ability to explain and predict user acceptance of new technology [19,20]. Furthermore, online shopping is similar to general Internet-based IS that have a significant impact on individual decision-making behaviors and Internet marketing strategies [21,22]. Hence, this study suggests that simultaneously testing the three competing models (TAM, TPB, and decomposed TPB model) can help understand consumer intentions to shop online. However, very limited empirical research has been performed to examine and compare the validity and explanatory utility of prevalent intention-based theories in the context of online shopping.

The main purpose of this study is to examine and compare which intention-based model is best for predicting consumer intentions to shop online. Specially, this study examines two variations of the TPB, namely pure TPB and decomposed TPB, and compares them to the TAM. The decomposed TPB model draws on constructs from the literature on innovation characteristics [23], and further explores the dimensions of subjective norms (such as interpersonal and external influence) and perceived behavioral control by decomposing them into specific dimensions. Data were gathered from 297 Taiwanese customers of online bookstores, and structural equation modeling (SEM) was used to compare the three models (TAM, TPB, and decomposed TPB model) in terms of overall model fit, exploratory power and path significance. Moreover, the three models are compared in terms of the extent to which each can predict consumer intentions to shop online. The theoretical and managerial relevance of the models is then discussed.

2. Theoretical models

2.1. Technology acceptance model

The TAM was conceived to explain and predict individual acceptance of IT [5,6]. TAM is an adaptation of the TRA [16], which specifies two beliefs, perceived usefulness (PU) and perceived ease of use (PEU), as determinants of attitude towards behavioral intentions and IT usage [6]. In the TAM, behavioral intention (BI) to use leads to actual IT usage (AU). Behavioral intention is determined jointly by attitude (A) and perceived usefulness, where the latter also influences attitude directly. Meanwhile, perceived ease of use directly affects both attitude and perceived usefulness.

Perceived usefulness is defined as the extent to which a person believes that using a particular system would enhance his or her job performance [5]. Consumers prefer to evaluate their online shopping performance in terms of the associated benefits and costs, including maximizing convenience and minimizing transaction time [24]. Thus, in the context of online shopping, this study measured the revised perceived usefulness in terms of three key items: facilitating comparison-shopping, providing access to useful information, and reducing shopping time. Perceived ease of use represents the degree to which a Web site is perceived to be easy to understand, learn or operate. As a Web site has a well-designed user interface, consumers are likely to believe that online shopping is free of effort.

2.2. Theory of planned behavior

The TPB [7,8] extends the TRA [16], to account for conditions where individuals do not have complete control over their behavior. The TPB postulates that actual usage (AU) is determined by behavioral intention (BI) and perceived behavioral control (PBC). Behavioral intention is determined by three factors: attitude (A), subjective norms (SN) and perceived behavioral control (PBC). Each factor is in turn generated by a number of beliefs and evaluations.

In the context of online shopping, attitude refers to general consumer feelings of favorableness or unfavorableness towards the use of online shopping. Moreover, subjective norms refer to consumer perceptions regarding the use of online shopping by the opinions of the referent group (such as friends or colleagues). Perceived behavioral control describes consumer perceptions of the availability of knowledge, resources, and opportunities necessary for using online shopping.

2.3. Decomposed theory of planned behavior

To understand the relationship between belief structures and antecedents of intention, several studies have examined approaches to decomposing attitudinal beliefs [9,17,23,25,26]. Moreover, Shimp and Kavas [27] suggested that the cognitive components of belief would not be organized into a single conceptual or cognitive unit. According to Taylor and Todd [9], in the decomposed TPB model, attitudinal, normative and control beliefs are decomposed into multidimensional belief constructs. The decomposed TPB model specified that, based on the diffusion of innovation theory [23], the attitudinal belief has three innovation characteristics that influence behavioral intentions are rela-
tive advantage, complexity and compatibility. Online shopping is a new form of home shopping that can be considered a service innovation [2]. This study thus hypothesizes that the decomposed TPB model provides a more satisfactory explanation of behavioral intentions to shop online.

Relative advantage refers to the degree to which an innovation providers benefits which supersed those of its precursor and may incorporate factors such as economic benefits, image enhancement, convenience and satisfaction [21]. The relative advantage is often considered to be the “perceived usefulness” in TAM [5]. The complexity construct is extremely similar (although in an opposite direction) to “perceived ease of use” concept in TAM [5]. Compatibility is the degree to which the innovation fits with the potential adopter’s existing values, previous experiences and current needs [23]. Since Verhoef and Langerak [2] indicated that consumers who consider online shopping to be compatible with their value, needs and lifestyle, express high willingness to shop online. Accordingly, in the context of online shopping, this study proposes decomposing attitude into three components: perceived usefulness, perceived ease of use, and compatibility.

Previous studies generally took personal influence (normative influence) and external environmental influence (informational influence) as determinants of subjective norms [9,28]. For example, Bhattacherjee [28] viewed subjective norms as including two influences: interpersonal influence and external influence. Interpersonal influence indicates word-of-mouth influence by friends, colleagues, and superiors, while external influence indicates mass media reports, expert opinions, and other non-personal information considered by individuals when performing a behavior. In the context of B2C e-commerce, individual intentions regarding service acceptance for e-commerce are shaped not only by interpersonal influence (from friends, family, and colleagues/peers), but also by the opinions of industry experts, as disseminated by the popular press [28]. Accordingly, in online shopping acceptance contexts, measures of subjective norms should consider both interpersonal as well as external influences.

Ajzen [8] extended TPB using the decomposition PBC component into two dimensions: self-efficacy and facilitating conditions. The first dimension, self-efficacy (SE), is defined as individual judgment of individual capabilities to use IT [29,30]. In the context of online shopping, self-efficacy refers to consumer self-assessments of his/her capabilities to shop online. Meanwhile, the second dimension is facilitating conditions (FC), which reflects the availability of resources needed to perform particular behaviors [9,31]. In fact, with the growing availability of supporting Internet equipments (technology facilitating conditions) and resource factors such as time and money (resource facilitating conditions), online shopping will also become increasingly accessible. Accordingly, this study focused on assessing the facilitating conditions for online shopping, including three important resources: Internet equipment, time, and money.

3. Research methodology

3.1. Subjects and procedure

A total of 305 questionnaires were distributed to senior year undergraduate students taking the course on Electronic Commerce at a large university located in the north Taiwan. The student subjects were selected in this study for three reasons. First, according to the 2004 Taiwan Internet users’ survey report (http://survey.yam.com/survey/2004/index.htm), about 40% of Internet users in Taiwan are college students. Moreover, college students are greatest proportion of Internet users. Second, online consumers generally are younger and better educated than conventional consumers, meaning that the student subjects closely resemble the online consumer population [32]. Finally, the use of students as subjects in this study can decrease the effect of variance in web-based literacy.

The study was conducted in the following stages. First, the subjects were instructed to navigate online bookstores (such as www.amazon.com, www.books.com.tw, and www.silkbook.com.tw) and search for books related to Electronic Commerce course they were taking. Next, the subjects were asked to select a textbook or reference book related for the course that they would like to buy from an online bookstore, and fulfillment time cannot be over 30 days. The subjects were given two tasks representing the online transaction process. The first task was to register with an online bookstore, search for the book selected by the participants and place it in the shopping cart. The second task involved filling out certain payment and delivery data. After completing these two tasks, all the 305 students completed the task successfully and the questionnaires were distributed in class. The response rate was 100%, but since eight questionnaires later were discarded because of missing data, the effective response rate was approximately 97%. Table 1 lists descriptive statistics about the sample.

3.2. Measurement

This study adapted the measures used to operationalize the constructs included in the investigated model from relevant previous studies, making minor wording changes to tailor these measures to the context of online shopping. The measures of actual usage, behavioral intention, perceived usefulness and perceived ease of use adapted from Davis [5]. The belief items for measuring compatibility, attitude, subjective norms, and perceived behavioral control were revised from Taylor and Todd [9]. Items for interpersonal influence and external influence were adapted from Bhattacherjee [28], while items for measuring self-efficacy and facilitating conditions were adapted from Taylor and Todd [9]. All items were measured using a seven-point
Likert-type scale (ranging from 1 = strongly disagree to 7 = strongly agree).

With the establishment of content validity, the questionnaire was refined through rigorous pre-testing. The pre-testing focused on instrument clarity, question wording and validity. During the pre-testing, 15 experienced online shoppers were taken as subjects and invited to comment on the questions and wordings. The comments of these 15 individuals then provided a basis for revisions to the construct measures. Several items were removed from the instrument based on the feedback from the pre-testing subjects. The appendix lists all of the survey items.

3.3. Statistical analysis

The hypothesized models are empirically tested using the structural equation modeling (SEM) approach, supported by LISREL 8.3 software with maximum likelihood estimation [33]. Following the two-stage model-building process for applying SEM [33,34]. The measurement model was estimated using confirmatory factor analysis (CFA) to test reliability and validity of the measurement model, and the structural model also was analyzed to examine the model fit results of the proposed theoretical models (TAM, TPB, and the decomposed TPB model).

4. Results

4.1. Measure reliability and validity

The research instrument used confirmatory factor analysis (CFA) to examine the reliability and validity. Table 2 summarized the results of internal reliability and convergent validity for constructs. Internal consistency reliability to test unidimensionality was assessed by Cronbach’s alpha. The resulting alpha values ranged from 0.78 to 0.90, which were above the acceptable threshold 0.70 suggested by Nunnally and Bernstein [35].

Convergent validity is the degree to which multiple attempts to measure the same concept in agreement. Convergent validity was assessed based on factor loading, composite reliabilities, and variances extracted [34]. The results of the convergent validity are shown in Table 2. The factor loading for all items exceeds the recommended level of 0.6[36]. Composite reliability values, which depict the degree to which the construct indicators indicate the latent construct, range from 0.70 to 0.86. The composite reliability of all latent constructs exceeded recommended level of 0.7[34]. The average variances extracted, which

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Sample characteristics (n = 297)</th>
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<tbody>
<tr>
<td>Gender</td>
<td>Frequency</td>
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<tr>
<td>Male</td>
<td>159</td>
</tr>
<tr>
<td>Female</td>
<td>138</td>
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<tr>
<td>Age</td>
<td>Frequency</td>
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<tr>
<td>&lt;25</td>
<td>203</td>
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<td>25–35</td>
<td>80</td>
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<tr>
<td>&gt;35</td>
<td>14</td>
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<tr>
<td>Computer skills</td>
<td>Frequency</td>
</tr>
<tr>
<td>Poor</td>
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<tr>
<td>Fair</td>
<td>72</td>
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<tr>
<td>Good</td>
<td>111</td>
</tr>
<tr>
<td>Very good</td>
<td>86</td>
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<tr>
<td>Internet experience (years)</td>
<td>Frequency</td>
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<tr>
<td>1–3</td>
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</tr>
<tr>
<td>4–7</td>
<td>175</td>
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<tr>
<td>&gt;6 year</td>
<td>77</td>
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<tr>
<td>Frequency of online buying</td>
<td>Frequency</td>
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<tr>
<td>1–5</td>
<td>195</td>
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<tr>
<td>6–9</td>
<td>68</td>
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<tr>
<td>10–20</td>
<td>29</td>
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<td>More than 20</td>
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<table>
<thead>
<tr>
<th>Table 2</th>
<th>Results of CFA for measurement model</th>
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<tbody>
<tr>
<td>Construct</td>
<td>Item</td>
</tr>
<tr>
<td>Actual usage</td>
<td>AU1</td>
</tr>
<tr>
<td>Behavioral intention</td>
<td>BI1</td>
</tr>
<tr>
<td>Perceived usefulness</td>
<td>PU1</td>
</tr>
<tr>
<td>Perceived ease of use</td>
<td>PEU1</td>
</tr>
<tr>
<td>Compatibility</td>
<td>C1</td>
</tr>
<tr>
<td>Attitude</td>
<td>A1</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>SN1</td>
</tr>
<tr>
<td>Perceived behavioral control</td>
<td>PBC1</td>
</tr>
<tr>
<td>Interpersonal influence</td>
<td>II1</td>
</tr>
<tr>
<td>External influence</td>
<td>EI1</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>SE1</td>
</tr>
<tr>
<td>Facilitating conditions</td>
<td>FC1</td>
</tr>
</tbody>
</table>

Notes: All t-value are significant at p < 0.001.

a Composite reliability = (square of the summation of the factor loadings)/{(square of the summation of the factor loadings) + (summation of error variances)}.
b Average variance extracted = (summation of the square of the factor loadings)/{summation of the square of the factor loadings} + (summation of error variances)}. 

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reflect the overall amount of variance in the indicators accounted for by the latent construct, were in the range between 0.53 and 0.71. The average variances extracted of all latent constructs exceeded recommended level of 0.5 [34]. Moreover, discriminant validity is the degree to which the measures of different concepts are distinct. Discriminant validity can be examined by comparing the squared correlations between constructs and variance extracted for a construct [37]. The analysis results showed that the square correlations for each construct is less than the average variance extracted by the indicators measuring that construct, as shown in Table 3, indicating the measure has adequately discriminant validity. In summary, the measurement model demonstrated adequate reliability, convergent validity, and discriminant validity.

The following measured indices was assessed the overall model fit. The observed normed $\chi^2$ for measurement model was 2.08 ($\chi^2 = 457.62$, df = 219) which is smaller than 3 recommended by Bagozzi and Yi [38]. Other fit indexes also show good fit for the measurement model. The adjusted goodness-of-fit index (AGFI) is 0.82, which exceeds the recommended cut-off level of 0.8 [39]. The non-normed fit index (NNFI) is 0.91 and comparative fit index (CFI) is 0.94, greater than the 0.9 recommended [38]. The root mean square error of approximation (RMSEA) is 0.059, exceeding the recommended cut-off level of 0.08 recommended by Browne and Cudeck [40]. The combination of these results suggests that the demonstrated measurement model fits the data well.

### 4.2. Structural model results

Table 4 showed the fit statistics for each structural model. Overall, the three structural models displayed a good fit with the data, compared with the suggested fit criteria [38-40]. Additionally, Table 4 summarizes the
variance explained ($R^2$ value) of each dependent construct to demonstrate its explanatory power.

Fig. 1 displayed all of the structural relationships among the studied constructs in TAM. Path coefficients and their significance, $R^2$ for each dependent construct are also presented in this figure. While Fig. 2 showed information for TPB. Fig. 3 displayed information for the decomposed TPB model.

4.2.1. Technology acceptance model

As indicated in Fig. 1, the paths from perceived ease of use to perceived usefulness and attitude are significant, as are the paths from perceived usefulness to attitude and behavioral intention. The path from attitude to intention is also significant. A further significant determinant of actual usage is behavioral intention. Additionally, in terms of predictive power, the model accounts for 30% of the
variance in actual usage, 41% of the variance in behavioral intention and 58% of the variance in attitude.

4.2.2. Theory of planned behavior

As noted in Fig. 2, attitude and PBC are significantly related to behavioral intention, but subjective norms are not. Further significant determinants of actual usage are PBC and behavioral intention.

In addition, the predictive power of the TPB model is comparable to the TAM. Attitude, subjective norms and perceived behavioral control added only slightly to the explanatory power of behavioral intention and actual usage ($R^2_{AU} = 0.46$ and $R^2_{AU} = 0.31$ for TPB, compared with 0.41 and 0.30 for TAM).

4.2.3. Decomposed theory of planned behavior

Fig. 3 showed that the paths from perceived usefulness, perceived ease of use and compatibility to attitude are significant. Although self-efficacy is a significant determinant of the PBC, facilitating conditions is not. Attitude and PBC are significantly related to behavioral intention. Moreover, interpersonal and external influences were significant predictors of subjective norms. However, like the pure TPB models, subjective norms are not significantly related to behavioral intention. Finally, PBC and behavioral intention are significant determinants of actual usage.

Additionally, the decomposed TPB provides somewhat better predictive power relative to the TAM and TPB models ($R^2_{AU} = 0.33$, $R^2_{AU} = 0.57$, $R^2_{AU} = 0.63$, $R^2_{SN} = 0.43$, $R^2_{PBC} = 0.52$). In particular, note that there is a slight increase in $R^2$ for behavioral intention relative to both TAM and pure TPB models.

5. Discussion and conclusions

5.1. Discussion of findings

This study compares three competing theoretical models (TAM, TPB, and decomposed TPB model) to explain consumer online shopping intentions. Based on the theory of comparison approach [9,17–20], this study adopted reasonable fit and explanatory power to evaluate three competing models and identify the best. As shown in Table 4, all three models achieve comparable fit to the data. Consequently, it is reasonable to examine the models in terms of their path significance and explanatory power. Moreover, comparison of the models reveals some important findings as following:

1. In all three models, behavioral intention is the primary direct determinant of actual usage. The TPB and decomposed TPB model add perceived behavioral control as an additional direct determinant of behavior. Additionally, regarding the ability of the three models to explain actual usage, the TAM model and two TPB models are roughly equivalent (TAM explains 30%, explains 31% and decomposed TPB 33% of the variance in actual usage).

2. Regarding the explanatory power of behavioral intention among three models, TAM explains 41% of the variance in behavioral intention, TPB explains 46% and decomposed TPB 57% of the variance in behavioral intention. This result indicates that the decomposition of beliefs provide some additional insight into behavioral intention.

3. Regarding ability to explain attitude, the decomposed TPB model predicted attitude towards online shopping better than TAM ($R^2_A = 0.63$ for decomposed TPB model and $R^2_A = 0.58$ for TAM). There is good evidence that innovation characteristics (such as consumer perceptions of usefulness, ease of use and compatibility of online shopping) provide a more efficient approach for assessing consumer attitudes towards online shopping [25].

4. The findings of this study showed that consumer intentions to shop online could be explained by attitude in all three models. Meanwhile, the decomposed TPB model identified perceived usefulness, ease of use and compatibility as significant predictors of attitude towards online shopping. The results reveal that consumers who perceived online shopping to be superior to traditional shopping, compatible with shopping needs and easy to operate, express high willingness to shop online. Hence, this study suggests that to attract and keep consumers, it is not enough to make a Web site easy to use. Instead, it is crucial to develop a Web site with valuable functions, such as designing simple ordering and fulfillment procedures and providing customizable personal websites, convenience consumers, improve consumer perceptions of Web site usefulness and match their shopping needs.

5. Regarding the subjective norms associated with online shopping, two TPB models found the influence of subjective norms on behavioral intentions to be insignificant. This result might be caused by the fact that all sample respondents had online shopping experience, thus reducing the reliance of potential customers on their friends, family, or colleagues for information regarding online shopping. This result might also be explained by the fact that consumers perceived shopping at both bricks-and-mortor and online retailers as a private behavior [13]. Consequently, this study may not infer that those who are important to consumers can influence their online shopping intentions.

6. Compared to the two TPB models, the PBC significantly influences consumer online shopping intentions. Moreover, self-efficacy and facilitating conditions components are encompassed in the decomposed TPB model. The results showed that only self-efficacy is positively associated with perceived behavioral control. This result is consistent with previous research on B2C e-commerce [11,41], which reported that consumers who are confident about engaging in online purchasing are more willing to shop online. Additionally, in this study, more than 80% of sample respondents had at least three years
of experience of using the Internet. These respondents were familiar with the Internet and thus had easy access to network resources. Consequently, the facilitating conditions for online shopping did not significantly influence perceptions of behavioral control.

5.2. Comparison and selection of models

In a setting in which all three models exhibit a reasonable fit to the data and explain similar amounts of the target behavior, other criteria must be examined to identify the best model [9]. Bagozzi [42] argued that given equivalent fit statistics and explanatory power, the best model is the most parsimonious. However, other studies suggested that some parsimony might need to be sacrificed to obtain the most complete understanding of a phenomenon. In this study, while all three models are relatively parsimonious, the 5-variable TAM is more parsimonious than the 12-variable decomposed TPB. Indeed, the decomposed TPB with 10 determinants of behavioral intention and actual usage can be considered an order of magnitude more complex than TAM, which has only three determinants of behavioral intention and actual usage.

By comparing the two TPB models, this study examines the trade-off between parsimony and understanding associated with decomposition. The decomposed TPB is more complex than the pure TPB owing to including additional constructs. However, decomposing the belief structures of TPB increases the explanatory power of the model for behavioral intention. More importantly, owing to its unidimensional belief constructs, the decomposed TPB provides better understanding of behavioral antecedents. The decomposed TPB thus is preferable to the pure form model.

Both TAM and the decomposed TPB models include specific constructs, which enable detailed understanding of behavioral intention and actual usage. The decomposed TPB model has a good fit to data and moderate predictive power, particularly in relation to behavioral intention, and it is not clear whether this offsets the increased complexity of the model relative to TAM. Seven more constructs must be included in the decomposed TPB model to increase the predictive power of actual usage by 3% relative to TAM. Additionally, the decomposed TPB model helps improve understanding of perceived behavioral control as a determinant of behavioral intention. That is, if the key objective is to predict actual usage, TAM can be considered preferable. However, the decomposed TPB model provides a fuller understanding of the determinants of behavioral intentions.

5.3. Implication for research and practice

The decomposed TPB model has seldom been applied in the literature to discuss consumer intentions to shop online and provide a comparison with the well-known TAM model. This study examined the TAM and two versions of the TPB models, and assessed the quality of explanations of consumer intentions to shop online provided by each model. In conclusion, the findings of this study provide some guidelines for model selection. Each model has clear strengths. If the sole objective is predicting actual online shopping use, then TAM may be preferable. However, the decomposed TPB model more fully explains behavioral intention. Hence, the results generally indicated that the decomposed TPB model provides an improved method of predicting consumer intentions to shop online. Additionally, from a managerial perspective, this study indicates that using innovation characteristics (such as consumer perceptions of usefulness, ease of use and compatibility of online shopping) for decomposition provides useful, actionable information which online retailer managers can use to plan appropriate online shopping services.

5.4. Limitations and further research

There are several limitations to this study, requiring further examination and additional research. First, this study has focused on respondents with experience of online shopping. The IS literature (e.g. Karahanna et al. [43]) suggests that determinants of intended behavioral change are based on user level of experience. Therefore, further research is needed to verify the research model using multiple respondents that include both high- and low-experience consumers. Second, since this study only considered online bookstores, it is unclear whether the analytical results can be generalized to other online marketplaces. Further research can apply the three models (TAM, TPB, and decomposed TPB models) to examine other types of online retailers, because consumer attitudes, subjective norms, and perceived behavioral control to shop online are context-dependent and may be related to specific products and services. Finally, since the sample was collected in Taiwan, generalizability to other countries might be limited due to cultural differences in online consumer behaviors. Hence, the three competing models should be tested further using samples from other countries, and further testing would provide a more robust test of the three competing models.

Appendix A. Questionnaire items

Actual usage
AU1: I prefer online shopping for buying books.
AU2: I frequently use online shopping.

Behavioral intention
BI1: I plan to use online shopping again.
BI2: I intend to shop online within the next 30 days.
BI3: I will strongly recommend online shopping to others.

Perceived usefulness
PU1: Using online shopping would facilitate comparison shopping.
PU2: Using online shopping would provide access to useful shopping information.
Perceived ease of use
PEU1: Learning to operate online shopping would not be easy for me. (Reverse coded)
PEU2: It would be easy for me to become skilled at using online shopping.

Compatibility
C1: Using online shopping fits well with my lifestyle.
C2: Using online shopping fits well with my shopping needs.

Attitude
A1: I feel using online shopping is a good idea.
A2: I feel using online shopping is a wise idea.
A3: I like to use online shopping.

Subjective norms
SN1: People who influence my behavior would encourage me to use online shopping.
SN2: People who are important to me would encourage me to use online shopping.

Perceived behavioral control
PBC1: I would be able to shop online.
PBC2: I can control my use of online shopping.

Interpersonal influence
II1: My family thinks that I should shop online.
II2: My friends think that I should shop online.
II3: People I knew think that using online shopping is a good idea.

External influence
EI1: I have read/seen news reports which say that online shopping provides a good way of buying books.
EI2: The popular press adopts a positive view towards using online shopping.
EI3: Mass media reports have influenced me to try online shopping to buy books.

Self-efficacy
SE1: I feel comfortable using online shopping on my own.
SE2: I can use online shopping even if no one is around to help me.

Facilitating conditions
FC1: I have the Internet equipment (modems, ADSL, etc.) required to use online shopping.
FC2: I have the time to use online shopping.
FC3: I have enough money to use online shopping.

References


