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A comparison of the behavior of different customer clusters towards Internet bookstores

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Abstract

This research was initiated in an attempt to understand customer intentions towards purchasing from an Internet bookstore. Ajzen's theory of planned behavior was used to predict the intentions and behavior of different customer groupings based on their lifestyle and personality. Factor and cluster analyses were used to segment the sample into three clusters. Data were then collected in seven colleges in Taiwan. After analyzing the results, various relationships between attitudes, subjective norms, perceived behavioral control, behavioral intention and real behavior were determined for the different groups.
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1. Introduction

1.1. Background and research motivation

It is important for managers to understand online purchase behavior and the factors that influence customers. Thus, the factors that influence attitudes, subjective norms and behavior toward online purchasing is important and predicting the effect of personality or lifestyle traits on purchasing behavior should be studied. From casual observations, marketing managers generally assume that consumers' behavior is congruent with their lifestyles and personalities [35]. Indeed, some researchers have found that individual behavior is influenced by personality traits and personal characteristics [30,31,17]. McAdams [42,43] suggested that we should study a

person in terms of a three-tiered framework involving three separate but overlapping levels: personality traits, personal concerns and life stories [10].

The theory of planned behavior (TPB) [2] provided a useful framework for understanding how attitudes, subjective norms and perceived behavioral combined to influence both intention and realized behavior [8]. Ajzen proposed it as an augmentation to the theory of reasoned action by incorporating perceived behavioral control, which was defined as one's perception of how easy it is to perform the behavior [4]. But although attitudes, subjective norms and perceived behavioral control have direct effects on behavioral intention, it has been suggested that these variables interact with each other. Ajzen [3] also proposed that perceived behavioral control could directly influence real behavior. Some workers have modified the TPB by adding self-identity or past behavior as an additional determinant of intention [14,15], and some have used it to predict search intentions and consumer misbehavior, etc. [26].

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In order to be successful, e-commerce builders must understand consumers' characteristics and needs. Recently, *personalization* has gained attention in the e-commerce field [44,56]; it accounts for personality, lifestyle, etc. These variables are significantly related to a decision and impact the behavior [50,40]. Similarly, consumer behavior has been linked to personality and lifestyle [33,45,41].

1.2. Research objectives

I used Ajzen's TPB to analyze the differences in behavior intention at Internet bookstores for various groupings of character and lifestyle. Such *character factors* are the intervening variables that are used to segment the market. My primary effort therefore was to:

- Divide the customers into groups that had common lifestyle and personality characteristics resulting in several homogeneous clusters.
- Use TPB to analyze the behavioral relationship model of each cluster.
- Compare the behavior of customers clusters toward Internet bookstore purchasing. Taiwanese college students were used as subjects in this study.

2. Literature review and research framework

2.1. Theory of planned behavior

TPB was developed from the theory of reasoned action (TRA) [18] and Fishbein's [20] original consumer expectancy-value model. Table 1 shows literature that has used it. TPB hypothesized that intention to perform a behavior is based on: attitudes, subjective norms and perceived behavioral control (the person's perception of his or her ability to perform the behavior) [61].

2.1.1. Attitude towards performing the behavior

Attitude towards performing the behavior (ATT) is defined as a person's general feeling that performing that behavior if a favorable or unfavorable action [21]. Attitude is of the set of beliefs that performing the behavior will lead to certain positive outcomes (behavioral beliefs, *B*) and the person's evaluation of the outcomes (outcome evaluations, *E*) [55]. It is determined by the sum of the expected outcomes and is weighted by the desirability of the outcome. The expectancy is measured as the likelihood (B) of the outcome occurring if the action is taken, and the value is measured as an evaluation (E) of the outcome when it does occur; thus, the sum of the expected values determines attitude [52].

2.1.2. Subjective norms

Subjective norms (SN) are perception of whether people who are important to the person think they should or should not perform an activity; this assumes that the more an individual perceives that others think he or she should engage in a behavior, the more likely it is that the person will do so [5].

2.1.3. Perceived behavioral control

Perceived behavioral control (PBC) [6] is assumed to reflect past experience as well as anticipated obstacles. The more resources and opportunities that individuals think they possess and the fewer obstacles they anticipate, the greater their perceived control over the behavior.

2.1.4. Behavioral intentions

Behavioral intention (BI) is the individual's subjective probability that he or she will engage in that behavior. The immediate determinant of a behavior is the individual's intention to perform or not perform that behavior. BI depends on three major factors: attitude towards performing the behavior, SN and PBC. The relative weights of these three components are expected to vary with the kind of behavior being predicted and with the conditions under which the behavior is to be performed.

2.1.5. Behavior

Behavior (BE) is determined by BI. Intentions are shaped by attitudes towards the behavior, SN and PBC over the real behavior. Support for the role of PBC on intention and behavior was provided by Taylor and Todd [60].

2.2. Research hypotheses

Based on these theories and prior research, my basic hypotheses were:

H₁. Attitude towards Internet bookstores will be significantly related to a person's behavioral intention to use them.

H₂. Subjective norms towards Internet bookstores will be significantly related to a person's behavioral intention to use them.

H₃. Perceived behavioral control towards Internet bookstores will be significantly related to a person's behavioral intention to use them.

H₄. A person's behavioral intention towards Internet bookstores will be significantly related to their real behavior there.

Table 1
Literature that uses the TPB in information and management research

Author	Subject	Result	Journal
Harrison, Mykytyn and Riemenschneider [25]	Executive decision about adoption of information technology in small business: theory and empirical tests	The TPB was used to explain and predict small business executives' decisions to adopt information technology (IT). Results indicated strong support for a decision process based on attitude, subjective norms, and perceived control regarding IT adoption	Information Systems Research (1997)
Liao, Shao, Wang and Chen [38]	The adoption of virtual banking: an empirical study	The TPB and innovation diffusion were used to study the adoption intention of virtual banks in a well-developed, international, financial city. The relationships found were only partially explained by the TPB and were useful for the strategic planning of IT in banking	International Journal of Information Management (1999)
Chau and Hu [13]	Investigating healthcare professionals' decisions to accept telemedicine technology: an empirical test of competing theories	This research evaluated the extent to which prevailing intention-based models, including the technology acceptance model (TAM), the theory of planned behavior (TPB), and an integrated model, could explain individual physicians' technology acceptance decisions	Information and Management (2002)
Riemenschneider, Harrison and Mykyth [57]	Understanding IT adoption decision in small business: integrating current theories	This study combined the TPB and the TAM to integrate a model and applied it to the IT adoption decisions of small business executives regarding websites	Information and Management (2003)
Leonard, Cronan and Kreie [37]	What influences IT ethical behavior intentions-planned behavior, reasoned action, perceived importance, or individual characteristics	This paper proposed model integrated elements from the TPB and the TRA, as well as ethical decision-making models. The results showed that some factors are consistently significant in affecting attitude and behavioral intention	Information and Management (2004)
Shih and Fang [58]	The use of a decomposed theory of planned behavior to study Internet banking in Taiwan	This study predicted customers' intentions to adopt Internet banking using the TPB. Results generally supported the TPB and provided a good fit for the data	Internet Research (2004)
Hansen, Jensen and Solgaard [24]	Predicting online grocery buying intention: a comparison of the theory of reasoned action and the theory of planned behavior	This paper tested the ability of two consumer theories, the theory of reasoned action and the theory of planned behavior, in predicting consumer online grocery buying intentions. These results suggested that the TPB provided the best fit for the data and the behavior	International Journal of Information (2004)
Hsu and Chiu [28]	Internet self-efficacy and electronic service acceptance	This study introduced two types of ISE (general Internet self-efficacy and Web-specific self-efficacy) as new factors that reflect the user's behavioral control beliefs in e-service acceptance. It extended and empirically validated the TPB for the WWW	Decision Support Systems (2004)
Ramus and Nielsen [54]	Online grocery retailing: what do consumers think?	This study used the TPB as a theoretical framework to explore in-depth the range of beliefs held by consumers about Internet shopping in general and Internet grocery shopping in particular	Internet Research (2005)

H₅. Perceived behavioral control towards Internet bookstores will be significantly related to real behavior there.

2.3. Research framework

The TPB for activities at an Internet bookstore is depicted in Fig. 1.

3. Methods

3.1. Sampling

The study used Taiwanese college students as subjects because they almost all use Internet bookstores. The data were collected in seven colleges, using the quota and convenience sampling method, from 770 students (110 from each college). The respondents were first asked questions to elicit their major characteristics and demographics, including lifestyle and personality and they were then asked about their attitudes, beliefs, subjective norms, the degree of perceived behavioral control, behavioral intention towards Internet bookstores and real behavior.

3.2. Statistical analysis methods

Segmentation of the data was performed using factor analysis based on the lifestyle and personality character factors. To obtain the factors, a principal component factor analysis and varimax rotation were used. The students were then grouped into clusters using their character factors scores in K-mean's cluster analysis.

Analysis of variance and discriminant analysis were then employed to evaluate the discrimination between the cluster groups, and lifestyle and personality segments were identified. Finally, the structural model was used to analyze the behavior structure for every character cluster. The analysis of moment structures (AMOS) package was the major technique used in producing the structural equation model (SEM) with latent variables to test the hypotheses [9].

3.3. Questionnaire design

Values and lifestyles systems (VALS) have been used to segment markets and target new products or services. To determine students' characteristics and segmentation, I defined 23 lifestyle and personality questions,
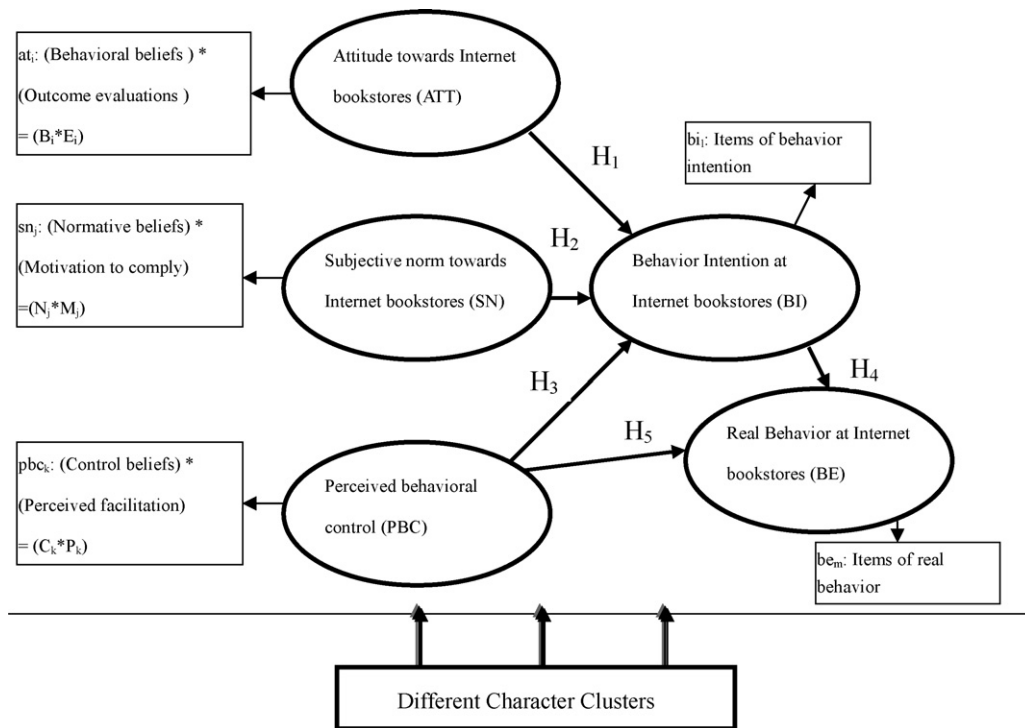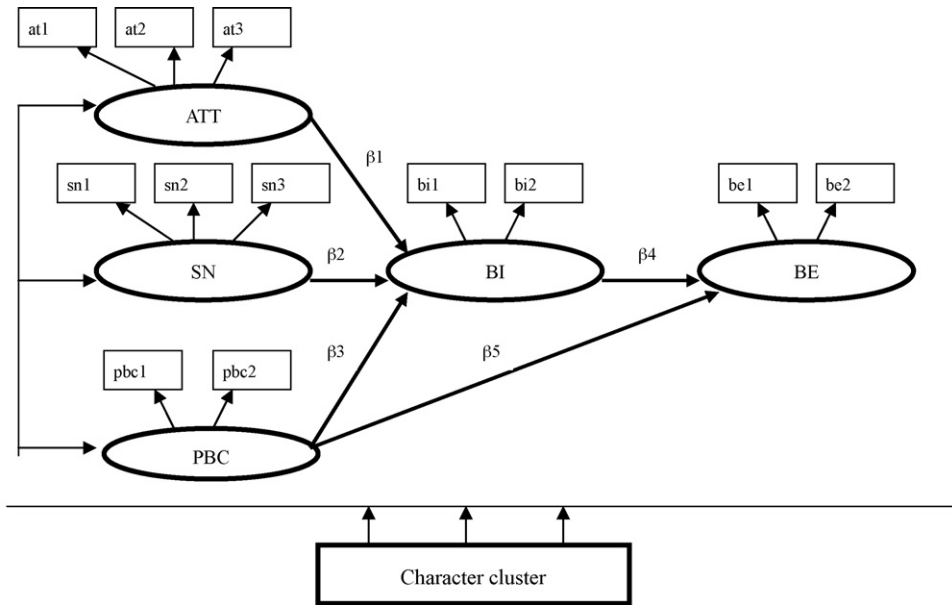

Fig. 1. Research framework.

Fig. 2. Relationship structure model.

constructed according to VALS2 of SRI [51] with the measure methods proposed by Kassarjian and Sheffert [34] and Arnould et al. [7]. Then, a focus group of 10-student Internet users helped to verify the descriptions and design the questionnaire.

As a result, 19 items were selected for determining user character. Students' lifestyles and personalities were collected using a 7-point Likert scale; and demographic data and Internet bookstore shopping experiences were assessed using a nominal scale.

Another focus group from the 10-student group and referents were used to develop measures for the structural model of the final questionnaire. The TPB model components of the research instrument were formulated in general conformance with the measures employed by previous researchers. Many had used the TPB and TRA model components and shown high reliability and discriminate validity in their studies [53,11,59,48,49]. My study was based on the TPB model and used multiple-item scales to measure each component. Twenty items resulted from this process; they were then tested with five experienced Internet bookstore users in a third focus group. Each person was asked to read the 20 items and mark those that were clearly appropriate. Only items that were marked by all five were included in the resulting scale. Finally, a 12-item scale was adopted.

The variables and measurement scales are shown below and in Appendix A. The relationships between every two variables are given in Fig. 2, the items about

lifestyle and personality and model's component questions were included in Sections I and II, and the items about demographic and Internet bookstore shopping experiences were shown in Section III of Appendix A.

3.4. Measurement variables identify of structure model

The measurement variables of the structure model were identified as follows:

1. Attitude toward the act (ATT) is a function of the perceived consequences people associate with the behavior (*B*), and the evaluation of those consequences (*E*) [36] giving:

$$\text{ATT} \propto \sum_{i=1}^{n} B_i \times E_i$$

In the study, variables *B* and *E* were measured by asking students to rate three statements: ''Internet bookstores offer much information'', ''Internet bookstores offer convenience'' and ''Internet bookstores offer more free shopping time''. The B_i were measured by a 7-point scale from 1 (strongly disagree) to 7 (strongly agree); the E_i were measured by a 7-point scale from 1 (very unimportant) to 7 (very important).

2. The subjective norm (SN), is represented as a function of the person's beliefs about the expectations of

important others (N), and his or her motivation to comply with them (M) [19]. The function equation is:

$$SN \propto \sum_{j=1}^{n} N_j \times M_j$$

N and M were measured by asking students to rate the three items: ''Parent's opinion'', ''Brother or sister's opinion'' and ''Friend's opinion'' (N_j) on a 7-point scale from 1 (very unimportant) to 7 (very important); the M_j were measured by a 7-point scale from 1 (do not want to comply) to 7 (very strongly want to comply).

3. Perceived behavioral control (PBC) is a function of the resources and opportunities that an individual possesses (control beliefs, C), and the facilitating or inhibiting effect of those factors (perceived facilitation, P). The function equation is:

$$PBC \propto \sum_{k=1}^{n} C_k \times P_k.$$

I measured C and P by asking students to rate the effect of two items: ''Resources regarding Internet bookstore usage'' and ''Ability to use Internet bookstores''. The C_k was measured on a 7-point scale from 1 (very few) to 7 (very many); the P_k was measured by a 7-point scale from 1 (very unimportant) to 7 (very important).

4. Behavioral intention (BI) depends on three major factors: attitude towards performing the behavior, subjective norms and perceived behavioral control. It was measured on two statements: ''I like Internet bookstores'' and ''I will shop via Internet bookstores'' on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree).

5. Real behavior (BE), was measured by two statements: ''I have shopped via Internet bookstores'' and ''I often use Internet bookstores''.

Integrating these components, Ajzen expressed the relationships in equation form as:

$$BE \sim BI = w_1(ATT) + w_2(SN) + w_3(PBC)$$

As the TPB model showed, to predict behavior, one must determine the individual's attitude towards the specific behavior (ATT), his or her subjective norm (SN) and perceived behavioral control (PBC) of that behavior. Each of these was weighted (by w_1, w_2 and w_3) to reflect its relative importance in influencing behavioral intention. This assumes that a person's behavior is a function of his or her intention to behave in a certain manner [39].

Table 2
Pilot reliability of six dimensions

Dimensions	No. of items	Cronbach's α
Consumer character	19	0.9228
Attitude	6	0.9237
Subjective norm	6	0.9343
Perceived behavioral control	4	0.9325
Behavioral intention	2	0.8647
Behavior	2	0.9385

3.5. Pilot

A pilot test was performed, using 32 college students, to determine the reliability of the measurement scale which included: 19 items on consumer character; 6 items for attitude (3 for B_i and 3 for E_i); 6 items for the subjective norm (3 for N_j and 3 for M_j); 4 items for perceived behavioral control (2 for C_k and 2 for P_k); 2 items for behavioral intention and 2 items for real behavior (see Sections I and II of Appendix A). The item reliability for each scale was examined using Cronbach's α to confirm internal consistency of the measures. Nunnally [47] suggested that a scale can be considered to have high reliability if Cronbach's α is greater than 0.70 and should be removed if it was lower than 0.35. The Cronbach's α tests (see Table 2) showed that the measurement scales had strong reliability (all reliability coefficients for every dimension were greater than 0.86).

Because the questionnaire was amended several times after literature review and repetitive discussion, it was presumed to have content validity.

4. Results

4.1. Sample

The primary data were collected using a survey of 770 college students. Six hundred and eighty six questionnaires were returned for a response rate of 89.1%. For a 95% confidence coefficient, the tolerated research error for the effective data was less than 0.037. The sample was 36.4% male and 63.6% female. Most respondents were either in their third (32.2%) or second year (31.3%), and 35.9% were working. Most used the Internet at home (59.6%). Though only 29.7% had shopped at Internet bookstores, all had online experience and had visited Internet bookstores. They were thus potential customers for Internet bookstores, and their behavior intentions were valuable for the study.

4.2. Segmentation

This study examined segmentation by lifestyle and personality variables to search for different character clusters.

Student participants' lifestyle and personality data were submitted to a principal component factor analysis with a varimax rotation. Using an eigenvalue greater than 1 as a selection criterion, four factors emerged. These character factors accounted for 63.1% of the variance and the factor loading for all items were greater than 0.6. To check the reliability of the four emerging factors, Cronbach's α coefficients were computed. The results showed all Cronbach's α for all factors as greater than 0.81, meaning that each factor scale had consistency (see Table 3).

Once the characteristic factors were established, the factor scores could be clustered to form segments with similar lifestyles and personalities. K-mean cluster analysis was used to segment students because it is more acceptable than the hierarchical approach [1]. When consumer responses were subjected to K-mean cluster analysis, three distinctive market segments emerged.

Because of the results of ANOVA, the segments were shown to be significantly different on every component score of the structural model. The ANOVA results showed that these three segments were significantly different on attitude score (ATT) ($F = 80.598$; $p < 0.01$). Three segments were significantly different on subjective norms score (SN) ($F = 70.678$; $p < 0.01$). Three segments were significantly different on perceived behavioral control score (PBC) ($F = 78.807$; $p < 0.01$). Three segments were significantly different on behavioral intention score (BI) ($F = 38.882$; $p < 0.01$) and three segments were significantly different on real behavior score (BE) ($F = 23.174$; $p < 0.01$), meaning that these component scores were significantly different among the three clusters, as shown in Table 4. Scheffe's test showed a significant difference between two clusters. The character clusters had various behavioral representations.

To evaluate the discrimination among cluster groups, ANOVA and discriminant analysis were used to assess the clustering effect. The ANOVA results showed that the three segments were significantly different on the fashion factor score ($F = 4.675$; $p = 0.01$); three segments were significantly different on the friendship factor score ($F = 333.671$; $p < 0.01$); three segments were significantly different on the independent factor score ($F = 388.479$; $p < 0.01$); and three segments were

Table 3
Factor analysis and reliability of four consumers' characters ($n = 686$)

Factors and items	Factor loading	Eigenvalue	Cumulative percent of variance	Cronbach's α
Fashion		8.629	36.320	0.8437
(11) I take note of new happenings in the society	0.7843			
(12) I like to purchase new products	0.7491			
(13) I do not like to be unalterable	0.7864			
(14) I like fashionable things	0.7274			
(15) I frequently read fashion magazines or articles	0.7537			
Friendship		3.479	50.963	0.8256
(1) I acquire new information through friends	0.8270			
(2) I am an optimist	0.8245			
(3) I enjoy making friends	0.7755			
(4) I love outdoor activities	0.7849			
(5) I like group outings	0.7961			
Independent		1.550	57.486	0.8214
(16) I have ideas of my own	0.7338			
(17) I like challenges in life	0.7417			
(18) I show empathy and offer help to those who are weaker than me	0.7368			
(19) Displaying my strength is an enjoyable thing	0.7225			
Conservative		1.329	63.079	0.8183
(6) I am someone who needs to feel secure	0.7602			
(7) I am not good at expressing myself	0.6293			
(8) I like to be alone	0.6404			
(9) I am more silent in a group	0.6018			
(10) I prefer sedentary activities	0.6509			

Table 4
Analysis of variance toward five components of structure model for the three clusters

Components	Cluster (mean of component score)			F	p (sig.)	Scheffe test (cluster mean differences)
	1	2	3			
Attitude	122.54	112.23	92.10	80.598	0.000[***]	(1 > 2), (1 > 3), (2 > 3)
Subjective norm	78.89	57.86	59.00	70.678	0.000[***]	(1 > 2), (1 > 3)
Perceived behavioral control	61.08	46.10	43.69	78.807	0.000[***]	(1 > 2), (1 > 3)
Behavioral intention	10.08	8.33	8.69	38.882	0.000[***]	(1 > 2), (1 > 3)
Real behavior	8.64	6.64	7.72	23.174	0.000[***]	(1 > 2), (1 > 3), (3 > 2)

[***] $p < 0.0001$.

significantly different on the conservative factor score ($F = 14.106$; $p < 0.01$). This means that these character factor scores were significantly different among the three clusters. The Scheffe test showed a significant difference between two clusters, as shown in Table 5. The mean factor score showed that Cluster 1 had the greatest factor score on the fashion, independent and conservative factors; Cluster 2 had the greatest score on the friendship factor. Cluster 3 had the lowest factor score all four factors.

On the other hand, discriminant analysis results were significant (two equations' Wilks Lambda were 0.212 and 0.496, $p = 0.000$; χ^2 were 1058.351 and 477.741, $p = 0.000$), and the ratio of correct classification was 94.9%. These show that the segmentation was effective.

The last stage of the analysis was the identification of segments based on a cluster's characteristics. Each segment name was based on its unique characteristics as reported in Table 6.

1. The fashion and independence cluster had the highest positive scores regarding attitude, subjective norms, perceived behavioral control towards Internet bookstores, and even behavioral intention and real behavior, showing that this group had the strongest preference for Internet bookstores. There were more males in this group than in the other two (40.4%), 42.7% worked, used Internet bookstores more often

than the others (33.6%), were online at home (59.2%), and went online at coffee shops (16.4%). This cluster also spent more money at bookstores.
2. The friendly cluster's attitude and degree of perceived behavioral control were in the middle and had the lowest scores in subjective norms, behavioral intention and purchase behavior. They were mostly female (73.3%), online at home (61.6%), had rarely used Internet bookstores (83.3%), less (32.9%) had a job and spent little at bookstores.
3. The conservation cluster had the lowest scores in attitude and perceived behavioral control. Their scores in subjective norms, behavioral intention and behavior were in the middle of the three clusters. They were online at home (59.0%) or school (27.8%), 32.2% had often used Internet bookstores, most were female (61.8%), 32.7% had a job and their book expenses were in the middle of the clusters.

4.3. Structural model

Before the structural model analysis, this study used Cronbach's α to test the measurement scale reliability of three models' components. Results showed that every component of the three clusters' models had strong reliability with all Cronbach's α greater than 0.77 (shown in Table 7).

Table 5
Analysis of variance toward four character factors for the three clusters

Factors	Cluster (mean of factor scores)			F	p (sig.)	Scheffe test (cluster mean differences)
	1 ($n = 213$)	2 ($n = 146$)	3 ($n = 327$)			
Fashion	1.49081	−0.09237	−0.05587	4.675	0.010[**]	(1 > 2), (1 > 3)
Friendship	0.35325	1.01052	−0.68128	333.671	0.000[***]	(2 > 1), (1 > 3), (2 > 3)
Independent	0.99446	−0.74652	−0.31445	388.479	0.000[***]	(1 > 2), (1 > 3), (3 > 2)
Conservative	0.15926	−0.29193	0.02660	14.106	0.000[***]	(1 > 2), (3 > 2)

[**] $p < 0.05$.
[***] $p < 0.0001$.

Table 6
Chi-square test toward seven items for the three clusters

Items	χ^2 (p-value)	(1) The fashion and independent cluster	(2) The friendly cluster	(3) The conservation cluster
Online place	28.667 (0.000[***])	Home (59.2%); coffee shop (16.4%)	Home (61.6%); school (27.4%)	Home (59.0%); school (27.8%)
Used Internet bookstore	7.301 (0.026[**])	Many (33.6%); few (66.4%)	Many (16.7%); few (83.3%)	Many (32.2%); few (67.8%)
Gender	7.840 (0.02[**])	Male (40.4%); female (59.6%)	Male (26.7%); female (73.3%)	Male (38.2%); female (61.8%)
Grade	16.192 (0.000[***])	Third (37.6%); second (36.6%)	Third (38.4); first (26.7%)	Second (31.8%); first (28.4%)
Had a job	6.327 (0.042[**])	Yes (42.7%); no (57.3%)	Yes (32.9%); no (67.1%)	Yes (32.7%); no (67.3%)
Expense per month (US$)	16.346 (0.038[**])	115–172 (32.4%); 115 below (24.9%)	115 below (37.7%); 115–72 (31.5%)	115–172 (35.2%); 115 below (24.8%)
Book expenses per month (US$)	42.223 (0.000[***])	15 below (50.2%); 16–30 (44.6%)	15 below (80.8%)	15 below (69.7%)

[**] $p < 0.05$.
[***] $p < 0.0001$.

Then, I analyzed the data with the AMOS structural equation modeling software. The Chi-square statistic was used to evaluate the model's overall performance. Since larger samples have a larger Chi-square that indicates a poor model fit, Chi-square/degree of freedom (χ^2/d.f.) has been suggested as a corrective strategy [62]. Carmines and McIver [12] suggested that less than two or three times χ^2/d.f. are acceptable [27].

In addition, I based the selection of indices on the recommendations of Hu and Bentler [29] and Mueller [46] and adopted indices including the goodness-of-fit index (GFI), the normed fit index (NFI), the adjusted goodness of fit index (AGFI), the comparative fit index (CFI) and the root mean square error of approximation (RMSEA), to measure the overall model fit. Following common practice, this study considered a value greater than 0.9 as demonstrative of a good fit for GFI, NFI, AGFI, CFI; and RMSEA lower than 0.08 was also used [32,16,22,23].

4.4. Relationship structure analysis

The structure analysis included the relationships about students' attitudes towards Internet bookstores, subjective norms of reference groups, perceived behavioral control variables, behavioral intention and real behavior. AMOS was used to solve the path diagram.

There were three models: Model 1 for the fashion and independence cluster, Model 2 for the friendly cluster and Model 3 for the conservation cluster. The results showed the three structure models all fit the data:

1. Though the Chi-square test of Model 1, the fashion and independence cluster's model, was significant ($\chi^2 = 72.367$, d.f. = 41, $p = 0.002$), however, the χ^2/d.f. is 1.765 which lower than 2, the four fit indices were substantially greater than 0.90 (GFI = 0.949, AGFI = 0.903, NFI = 0.960, CFI = 0.982), and the

Table 7
Reliability of five components of structure model for the three clusters

Components (no. of items)	Cronbach's α			
	(1) The fashion and independent cluster ($n = 213$)	(2) The friendly cluster ($n = 146$)	(3) The conservation cluster ($n = 327$)	Total ($n = 686$)
Attitude (6)	0.8389	0.7852	0.8151	0.8499
Subjective norm (6)	0.9158	0.8193	0.9022	0.9171
Perceived behavior control (4)	0.8112	0.7745	0.8833	0.8617
Behavioral intention (2)	0.7985	0.8076	0.7932	0.8187
Real behavior (2)	0.9186	0.9121	0.8911	0.9130

Table 8
Coefficients between latent variables and measurement variables for three structure models

Measurement variable ← latent variable	Model 1	Model 2	Model 3
at1 ← ATT	0.794***	0.724***	0.681***
at2 ← ATT	0.843***	0.903***	0.908***
at3 ← ATT	0.764***	0.650***	0.759***
sn1 ← SN	0.850***	0.760***	0.851***
sn2 ← SN	0.920***	0.855***	0.910***
sn3 ← SN	0.893***	0.745***	0.852***
pbc1 ← PBC	0.844***	0.743***	0.949***
pbc2 ← PBC	0.810***	0.862***	0.836***
bi1 ← BI	0.861***	0.930***	0.881***
bi2 ← BI	0.739***	0.727***	0.734***
be1 ← BE	0.908***	0.902***	0.857***
be2 ← BE	0.945***	0.924***	0.941***

*** $p < 0.0001$.

RMSEA was below 0.08 (RMSEA = 0.060). These results showed that Model 1 was very good. Also, all items were loaded significantly at the 0.01 levels on their assigned latent variable (see Table 8).Table 9 shows that ATT had a significant positive impact on BI ($\beta_1 = 0.173$, $p = 0.066$), which supported H_1; SN had a very significant positive impact on BI ($\beta_2 = 0.657$, $p = 0.000$), which strongly supported H_2; and BI had a very significant positive influence on BE ($\beta_4 = 0.977$, $p = 0.000$), which strongly supported H_4. The results showed, however, that PBC did not have a significant impact on BI and BE. Thus, H_3 and H_5 were not supported.

Since PBC is a consumer's perceived ease or difficulty in using Internet bookstores, this cluster had the strongest preference for Internet bookstores, used them more often and spent more money at them. They had more resources and opportunities for easy access. Thus, BI and BE were not influenced by PBC. Though PBC did not impact BI and BE, the interaction effect of variables ATT, SN and PBC had a significantly positive relationship. The correlation coefficient between ATT and SN was 0.319 ($p = 0.000$), between SN and PBC was 0.597 ($p = 0.000$) and between ATT and PBC was 0.597 ($p = 0.000$). Thus, the key paths that influence the fashion and independence cluster's real behavior are ATT and SN to BI then to BE. SN to BI is especially important; BI to BE was also shown to have a significant effect.

2. The friendly cluster's model also fit the data well. The Chi-square test for Model 2 was not significant at the 0.01 level ($\chi^2 = 63.686$, d.f. = 41, $p = 0.013$), and the χ^2/d.f. (1.533) was lower than 2. Beside, the four fit indices were substantially near or greater than 0.90 (GFI = 0.934, AGFI = 0.874, NFI = 0.926, CFI = 0.971), and the RMSEA was lower than 0.08 (RMSEA = 0.062). The GFI, NFI and CFI indicate a high degree of fit between the data and the proposed model, since they were greater than the 0.90 thresholds for acceptability. All items were loaded significantly at the 0.01 levels on their assigned latent variable. Thus, Model 2 is very good.Table 9 shows that SN had a significant positive impact on BI ($\beta_2 = 0.202$, $p = 0.031$), which supported H_2; PBC

Table 9
SEM analysis for three structure models

Path relationship and model fit index	Model 1	Model 2	Model 3
Attitude (ATT) → behavior intention (BI)	0.173*	0.154	0.063
Subjective norm (SN) → behavior intention (BI)	0.657***	0.202**	0.402***
Perceived behavioral control (PBC) → behavior intention (BI)	−0.041	0.338***	0.181**
Behavior intention (BI) → real behavior (BE)	0.977***	0.717***	0.781***
Perceived behavioral control (PBC) → real behavior (BE)	−.0102	−0.021	−0.089
(ATT) ←→ (SN)	0.319***	0.130***	0.398***
(SN) ←→ (PBC)	0.597***	0.267**	0.632***
(ATT) ←→ (PBC)	0.570***	0.481***	0.522***
χ^2/d.f.	1.765	1.533	1.463
p-Value	0.002	0.013	0.028
GFI	0.949	0.934	0.971
AGFI	0.903	0.874	0.945
NFI	0.960	0.926	0.975
CFI	0.982	0.971	0.992
RMSEA	0.060	0.062	0.038

* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.0001$.

had a very significant positive impact on BI ($\beta_3 = 0.338$, $p = 0.003$), which strongly supported H$_3$; and BI had a very significant positive influence on BE ($\beta_4 = 0.717$, $p = 0.000$), which strongly supported H$_4$. The results showed, however, that ATT did not have a significant impact on BI; and PBC did not have a significant impact on BE. Thus, H$_1$ and H$_5$ were not supported.

This cluster had the lowest behavioral intention and purchase behavior due to their limited resources, abilities and important referent others' opinions about Internet bookstore usage. Thus, PBC and SN were major influential factors on BI, and the influence of ATT was not significant. The interaction effect between ATT, SN and PBC, however, had a significantly positive relationship. The correlation coefficient between ATT and SN was 0.130 ($p = 0.057$), between SN and PBC was 0.267 ($p = 0.03$), between ATT and PBC was 0.481 ($p = 0.000$). In this cluster, the key paths that influenced real behavior were SN and PBC to BI then to BE. PBC to BI was especially important; BI to BE was also shown to have a significant effect.

3. The conservation cluster's model fit the data very well. The Chi-square test for Model 3 was not significant at the 0.01 level ($\chi^2 = 59.979$, d.f. = 41, $p = 0.028$), and the χ^2/d.f. (1.463) was lower than 2. The four fit indices were substantially greater than 0.90 (GFI = 0.971, AGFI = 0.945, NFI = 0.975, CFI = 0.992) and the RMSEA was lower than 0.08 (RMSEA = 0.038). These showed that the model was very acceptable. Also, all items were loaded significantly at the 0.01 levels on their assigned latent variable.

Table 9 shows that SN had a very significant positive impact on BI ($\beta_2 = 0.402$, $p = 0.000$), which strongly supported H$_2$; PBC had a significant positive impact on BI ($\beta_3 = 0.181$, $p = 0.026$), which supported H$_3$; and BI had a very significant positive influence on BE ($\beta_4 = 0.781$, $p = 0.000$), which strongly supported H$_4$. However, ATT did not have a significant impact on BI; and PBC did not have a significant impact on BE. Thus, H$_1$ and H$_5$ were not supported.

The most important influences on behavior intention here were subjective norms, as a result of the nature of the cluster's character. This attitude toward the Internet bookstore had no impact on behavior intention. However, the referent others' actions, thoughts, and attitudes toward Internet bookstores had strong impact on behavior intention. The interaction effect among variables ATT, SN and PBC, however, had a sig-

nificantly positive relationship. The correlation coefficient between ATT and SN was 0.398 ($p = 0.000$), between SN and PBC was 0.632 ($p = 0.000$) and between ATT and PBC was 0.522 ($p = 0.000$). In this cluster, the key paths that influence real behavior are SN and PBC to BI then to BE. SN to BI is especially important; BI to BE was also shown to have a significant effect.

5. Conclusion and implications

Three models were found acceptable and the results showed that the different character clusters have different structural relationships of behavior.

Those in the *fashion and independence* cluster had a positive view of Internet bookstores but did not have higher behavioral intention or real behavior. Their subjective norm did, however, have an important influence on behavioral intention. Thus, the reference group was apparently the key factor to behavior intention. This group focused more on reference people (their opinions were important) in changing behavioral intention. They also had the strongest preference for Internet bookstores, used Internet bookstores more often, and spent more money at bookstores. Internet bookstore managers should therefore explore this cluster's demands and characteristics and create products and services to attract and retain them.

The *friendly* cluster showed that subjective norms had a positive relationship with behavioral intention, perceived behavioral control had a very significant positive relationship with behavioral intention, and that behavioral intention had a strong positive influence on real behavior towards Internet bookstores. Thus, perceived behavioral control was the most important influence factor on behavioral intention for them and their attitudes did not significantly influence their behavioral intention. However, this cluster should not be the target market of Internet bookstores.

The *conservation* cluster showed that subjective norms and perceived behavioral control have positive relationships with behavioral intention, and that behavioral intention had a strong influence on purchase behavior towards Internet bookstores. Their scores in subjective norms, behavioral intention, and behavior were in the middle of the three clusters. Degree of Internet bookstore usage and book expenses were in the middle of the three clusters. Thus, they are important potential customers for Internet bookstores.

The college students in Taiwan, however, have the abilities and resources to use Internet bookstores and their purchase behaviors at Internet bookstores are not

impulsive purchase behaviors. Thus, perceived behavioral control is not the direct key factor influencing a person's real behavior. Attitudes, subjective norms and perceived behavioral control, however, influence behavior intention in various ways. The impact on real behavior does not differ much from the TPB model based on different character clusters. My study therefore highlighted the fact that different character clusters presented different relationship structure results, and clearly showed the major influence paths on BI and BE in the three models. Internet managers should understand different clusters' characters and behavior relationship structures, then design suitable strategies customized for these target markets.

6. Limitations

This study investigated Internet bookstore purchase intention and behavior and made comparisons between different character clusters. Ajzen's theory TPB was used to predict Internet bookstore purchase intention and behavior in those character groups, and proved that different relationship structures existed for different character clusters.

This study focused on college students in Taiwan because college students are the largest group of Internet bookstore users in Taiwan, according to a survey completed by the Taiwan Network Information Center. Thus, the results may not predict the market consumer's behavior.

This study used focus groups to investigate attitudes, subjective norms and perceived behavioral control items before collecting any data. Then, survey used quota and convenience sampling to get the sample of college students, but some failed responses may have produced a sampling error. Also, the sampling method for this study was a convenience sampling that was not scientifically designed. Therefore, significant efforts should be made to detect any potential biases in this non-random sample.

Finally, my work defined Internet bookstores generically, however, different lifestyles may result in different preferences towards different Internet bookstores.

Appendix A. Questionnaire

Section I:
Lifestyle and Personality

		strongly disagree						strongly agree
1.	I acquire new information through friends.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
2.	I am an optimist.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
3.	I enjoy making friends.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
4.	I love outdoor activities.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
5.	I like group outings.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
6.	I am someone who needs to feel secure.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
7.	I am not good at expressing myself.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
8.	I like to be alone.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
9.	I am more silent in a group.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
10.	I prefer sedentary activities.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
11.	I take note of new happenings in the society.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
12.	I like to purchase new products.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
13.	I don't like to be unalterable.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
14.	I like fashionable things.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
15.	I frequently read fashion magazines or articles.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
16.	I have ideas of my own.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
17.	I like challenges in life.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
18.	I show empathy and offer help to those who are weaker than me.	1☐	2☐	3☐	4☐	5☐	6☐	7☐
19.	Displaying my strength is an enjoyable thing.	1☐	2☐	3☐	4☐	5☐	6☐	7☐

Section II:
1. Attitude

	strongly agree						strongly disagree	very important						very unimportant
1. Internet bookstores offer much information	7	6	5	4	3	2	1	7	6	5	4	3	2	1
2. Internet bookstores offer convenience	7	6	5	4	3	2	1	7	6	5	4	3	2	1
3. Internet bookstores offer more free shopping time	7	6	5	4	3	2	1	7	6	5	4	3	2	1

2. Subjective norm

	very important						very unimportant	very strongly want to comply						do not want to comply
1. Parent's opinion	7	6	5	4	3	2	1	7	6	5	4	3	2	1
2. Brother or sister's opinion	7	6	5	4	3	2	1	7	6	5	4	3	2	1
3. Friend's opinion	7	6	5	4	3	2	1	7	6	5	4	3	2	1

3. Perceived behavioral control

	very many							very few	very important							very unimportant
1.Resources regarding Internet bookstore usage	7	6	5	4	3	2	1		7	6	5	4	3	2	1	
2.Ability to use Internet bookstores	7	6	5	4	3	2	1		7	6	5	4	3	2	1	

4. Behavioral Intention

	strongly agree						strongly disagree
1.I like Internet bookstores	7	6	5	4	3	2	1
2.I will shop via Internet bookstores	7	6	5	4	3	2	1

5. Behavior

	strongly agree						strongly disagree
1. I have shopped via Internet bookstores	7	6	5	4	3	2	1
2.I often use Internet bookstores	7	6	5	4	3	2	1

Section III:
Demographic and Internet Bookstore Shopping Experiences

1. Gender: □ Male   □ Female

2. Grade: □ First □ Second □ Third □ Fourth

3. Had a job: □ Yes □ No

4. Online place: □Home □ School □ Coffee shop □ etc.

5. Expense per month (US$): □ Below 115 □ 115- 172 □ 173-230 □ 230 above

6. Book expense per month (US$): □ Below 15 □ 16-30 □230 above

7. Used Internet bookstore per day: □ Many (5 hours above) □ Few (below 5 hours)

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