

ATTITUDE TOWARDS ONLINE RETAILING SERVICES: A COMPARISON OF STUDENT AND NON-STUDENT SAMPLES*

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ABSTRACT

This study examined the adequacy of using undergraduate student samples in research on online consumer attitudes by comparing the attitudes of students (n = 161) towards online retailing services with the attitudes of non-students (n = 252) towards such services. A structured questionnaire administered online was used to gather data on perceptions, satisfaction, and behavioral intentions with regard to online retailing services. The t-test results showed that, in general, students' attitude towards online retailing services is similar to that of non-students. Therefore, undergraduate students may be reasonable surrogates for consumers in research on online retailing.

Keywords: internet users, electronic commerce, online consumer attitudes, online retailing services, student surrogates

INTRODUCTION

The usage of the internet as a communication and transaction medium in consumer markets is growing rapidly (Castells, 2000; Hart, Doherty, & Ellis-Chadwick, 2000). In line with this expansion, consumer-based electronic commerce has become an emerging research area (e.g. Demangeot & Broderick, 2006, 2007; Teo, 2006; Tih & Ennis, 2006a, 2006b). In particular, a stream of research addressing issues related to online consumer attitudes (e.g. George, 2004; Wang, Chen, Chang, & Yang, 2007) and behaviors (see Cheung, Chan, & Limayem, 2005 for a review) has emerged. Although there is heightened interest among researchers in studying and understanding consumer responses to electronic commerce transactions, a complete sampling frame of this consumer segment is not readily available. As a result, researchers doing work in this area often resort to the use of convenience sampling for research purposes.

* An earlier version of this paper was presented at the 34th EMAC Conference in May 2005 in Milan, Italy.

One convenience sample researchers used is the student sample. Compared to the general population, college students are the heaviest users of internet technologies (Hoffman, Novak, & Venkatesh, 2004). Because students represent a potential ready segment for internet services and are believed to be frequent and active internet users (Jun, Yang, & Kim, 2003; Lee & Lin, 2005), they are commonly used in studies on internet technologies (e.g. Athiyaman, 2002; George, 2004; Goldsmith & Lafferty, 2002; O' Neill, Wright, & Fitz, 2001; Pedersen & Nysveen, 2001; Vijayasarathy & Jones, 2000). To date, however, little is known about whether or not students are appropriate to be used as surrogates for internet service users. Therefore, the purpose of this study is to investigate this important issue. Specifically, we are interested in determining whether or not undergraduate students and non-students differ significantly in their attitude (i.e. perception, satisfaction, and intention) towards online retailing services. This information is important for academic researchers who frequently use student participants in their studies. Should students be demonstrated to be adequate surrogates for their non-student counterparts, there will be less of a need to rely on other samples that are difficult and costly to obtain. In addition, information about any attitudinal differences between student and non-student segments would benefit practitioners because such information would help them in identifying and formulating standardized or customized marketing strategies to be directed at these segments in the competitive retail market.

CONCEPTUAL BACKGROUND

The Student Surrogate Controversy

Although the use of college students as research subjects is common in the social sciences, there is still no consensus among scholars as to whether or not such students are representative of the general population for research purposes (Peterson, 2001). Strong arguments have been forwarded both for and against the use of students as surrogates for non-students in research.

Scholars who favor the use of undergraduate students as surrogates in research contend that student samples may be just as useful for understanding organizational processes, and believe that researchers need to temper claims against their use by understanding their value (Greenberg, 1987). Other scholars who argue for the use of student samples contend that such samples are appropriate when (a) internal validity or theory application has priority (Calder, Phillips, & Tybout, 1981; Cardy, 1991); (b) examining underlying psychological or behavioral processes that are the same for any human subject (cf. Lamb & Stem, 1980); or (c) students have the information that is needed to achieve the research objectives (e.g. Athiyaman, 2002; Kempf, 1999; O' Neill et al., 2001).

Scholars who view the use of student samples with disfavor contend that undergraduate students might not represent other segments of the population, such as housewives or full-time employees. According to the proponents of this view, students should respond differently from non-students in research because they are demographically, psychologically, and socially different from other segments of the population (Enis, Cox, & Stafford, 1972). For example, not only do undergraduate students come from a very narrow age range, they also have less life experiences, less crystallized social and political attitudes, less developed self-concepts, stronger cognitive skills, more egocentricity, more need for peer approval, and stronger tendencies to comply with authority than do people in the general population (Peterson, 2001; Sears, 1986).

The empirical evidence on the student surrogate issue is also mixed. Studies from the various business disciplines exist in support of both views. For example, in consumer research, Beltramini (1983) compared 321 undergraduate students with 288 adults living in the same community and found the two samples to share similar attitudes towards the sports and entertainment events facility in their community. In a review of studies in organizational behavior and human resource management, Locke (1986) found college students and employees to respond similarly to variables such as goals, feedback, incentives and participation. More recently, Singer (2001) compared the implicit leadership theories of 220 undergraduate students with 152 middle-management employees and found little differences between the two groups. Finally, in the field of accounting, Liyanarachchi and Milne (2005) examined the adequacy of accounting students as surrogates for practicing accountants using an investment decision task and found students' investment decisions to compare well with those of the practitioners.

Scholars arguing against the use of student surrogates have also found support for their position by comparing results obtained from student and non-student samples. For example, Gordon, Slade, and Schmitt (1986) reviewed 32 behavioral research studies in which students and non-students participated under identical conditions and found the majority of studies using statistical tests of between-group differences to report significant differences between the two samples. More recently, James and Sonner (2001) reviewed nine advertising and consumer behavior studies and found student subjects to differ from non-student subjects in the majority of the studies. Finally, Peterson (2001), in a second-order meta-analysis of behavioral and psychological relationships, found the effect sizes obtained from college student subjects to differ frequently from those obtained from non-student subjects and cautioned against relying on the former for generating universal principles without replicating with non-student subjects.

Use of Student Surrogates in Internet Usage Research

The advent of the internet and its use among the academic population – including students – has encouraged the use of college students as surrogates for internet users in research. For example, college students were used to examine:

- (a) Attitudes toward web advertising (e.g. Brackett & Carr, 2001).
- (b) Factors that affect web advertising recall and recognition (e.g. Danaher & Mullarkey, 2003).
- (c) Relationships between personal characteristics and internet usage (e.g. Engelberg & Sjöberg, 2004).
- (d) Antecedents of online purchasing (e.g. Kuhlmeier & Knight, 2005).
- (e) Effects of consumer characteristics on online banking adoption (e.g. Lassar, Manolis, & Lassar, 2005).

The key question is whether or not college students' response reflect the attitudinal and behavioral patterns of the general population of internet users. In some studies that used non-student samples (e.g. De Kervenoael, Soopramanien, Hallsworth, & Elms, 2007; Mafe & Blas, 2006; Teo, 2006), it was found that the adopters of online shopping were highly educated. For example, in one such study, about 83% of the 486 adopters of online shopping in the study held an undergraduate degree or higher (e.g. Teo, 2006). In another study involving 450 respondents, the group of dependent internet users (i.e. users with heavy internet usage) were mainly young and highly-educated (e.g. Mafe & Blas, 2006). Finally, a qualitative study on electronic-grocery shoppers found a larger proportion of such shoppers to be tertiary educated (De Kervenoael et al., 2007). These studies suggest that there might be similarities in attitude and behavior between the academic population (i.e. college students) and the general population of internet users in an internet context.

Despite the enduring belief among some scholars that college students being active internet users are useful as research subjects in the internet context, empirical evidence is not available to support this position, prompting us to examine this question empirically. Specifically, our focus is on comparing students and non-students as subjects in attitudinal research in the context of online retailing.

According to the attitude literature, a person's evaluative response towards an attitude object can be cognitive, affective, or conative in nature (Ajzen & Fishbein, 1977; Eagly & Chaiken, 1993). The cognitive dimension comprises beliefs about the attitude object, the affective dimension comprises feelings towards the object, and the conative dimension comprises behavioral intentions towards the object (Mueller, 1986). In line with this categorization, we examined

the attitude of online retailing service users by separating it into three dimensions: cognitive perception (i.e. perceived quality and value of the services), affective satisfaction (i.e. level of satisfaction with the services), and conative intention (i.e. repatronage and switching intentions towards the services). Accordingly, the research questions we address in this study are as follows:

1. Do students and non-students differ in their perception of online retailing services?
2. Do students and non-students differ in their level of satisfaction with online retailing services?
3. Do students and non-students differ in their behavioral intention towards online retailing services?

METHOD

Sample and Data Collection Procedure

Data for this study were collected as part of a larger survey of consumer attitude towards online retailing services in the United Kingdom. We contacted potential respondents via e-mail with the help of the institutions to which they belonged (e.g. universities, companies). These institutions were located by using internet search engines (e.g. Google, Yahoo). Internet service users who had used online retailing services (e.g. purchased a book, purchased an airline ticket, or made banking transactions) were invited to participate in our web-based survey. We used an electronic survey because this method:

- (a) is consistent with the online context of our study,
- (b) represents an effective means for identifying internet users,
- (c) speeds up the data collection process, and
- (d) increases the likelihood of participation (Jayawardhena, 2004; Simsek & Veiga, 2001).

The samples for this study comprised of 413 individual users of online retailing services (161 undergraduate students and 252 non-students who were full-time employees). The demographic characteristics of this sample of respondents are summarized in Table 1. The student samples and the non-student samples differed in gender mix, marital status, age, educational level, and income level (all chi-square statistics were significant at the 0.05 level of significance). About 67% of the students participating in the study were women, whereas the non-student samples had about an equal mix of men and women. Also, as expected

greater percentages of the student samples were single, below 25 years old, did not hold a postgraduate degree, and reported an annual income level of less than £10,000 compared with the non-student samples.

Table 1
Respondents' profiles

Classification	Student samples (<i>n</i> = 161)	Non-student samples (<i>n</i> = 252)
	Number (%)	Number (%)
Gender:		
Male	53 (33.0)	120 (47.6)
Female	106 (65.8)	127 (50.4)
No response	2 (1.2)	5 (2.0)
Marital status:		
Single	148 (91.9)	89 (35.3)
Married	8 (5.0)	132 (52.4)
Other classification	5 (3.1)	29 (11.5)
No response	0	2 (0.8)
Age:		
16–24 years	149 (92.6)	10 (4.0)
25–29 years	7 (4.3)	54 (21.4)
30–34 years	3 (1.9)	49 (19.4)
35–44 years	2 (1.2)	64 (25.4)
45–54 years	0	62 (24.6)
> 55 years	0	12 (4.8)
No response	0	1 (0.4)
Education:		
Standard grade/O-level	2 (1.2)	7 (2.8)
Higher grade/A-level	90 (55.9)	11 (4.4)
Technical college/ Certificate/Diploma	8 (5.0)	33 (13.1)
Bachelor's degree	61 (37.9)	69 (27.4)
Master's degree	0	83 (32.9)
Doctoral degree	0	46 (18.2)
No response	0	3 (1.2)
Annual income:		
Less than £10,000	114 (70.8)	1 (0.4)
£10,000–£20,000	20 (12.4)	58 (23.0)
£20,001–£30,000	8 (5.0)	100 (39.7)
£30,001–£40,000	6 (3.7)	48 (19.0)
£40,001–£50,000	5 (3.1)	23 (9.1)
> £50,000	3 (1.9)	16 (6.4)
No response	5 (3.1)	6 (2.4)
Frequency of internet use:		
Daily	156 (96.9)	212 (84.1)
2–3 times a week	5 (3.1)	23 (9.1)
Weekly	0	7 (2.8)
Monthly	0	3 (1.2)
Other classification	0	4 (1.6)
No response	0	3 (1.2)

Questionnaire Development and Measures

We used a structured questionnaire for our online survey. This questionnaire was pilot tested iteratively among a convenience sample of colleagues, experts, and internet users. On the basis of feedback from the pilot tests, we made minor amendments to the questionnaire (e.g. reworded some statement items and questions to improve clarity).

We developed the attitude items for the questionnaire by drawing on reviews of the online services literature (e.g. Cai & Jun, 2003; Eggert & Ulaga, 2002; Janda, Trocchia, & Gwinner, 2002; Zeithaml, Parasuraman, & Malhotra, 2002) as well as feedback from two focus group discussions and 61 personal interviews. Perception of, satisfaction with, and behavioral intention towards online retailing services were assessed using 23, 5, and 4 items, respectively (see the appendix for a listing of these items). Survey participants responded to these items using a Likert scale anchored from 1 (strongly disagree) to 7 (strongly agree). They could also check the "not applicable" option that accompanied each question. We coded items such that the higher a score on an item the more positive the attitude.

Data Analysis

We checked for non-response bias by time trends extrapolation (cf. Armstrong & Overton, 1977). Following Bettencourt and Brown (2003), we regressed the date we received a completed questionnaire on the attitudinal variables. This produced a non-significant overall model indicating that non-response bias, although not completely discounted, is not likely to be a significant problem. We used independent sample *t*-tests (all two-tailed and significance set at 0.05) to test for attitudinal differences between student and non-student respondents. Finally, we computed effect sizes (differences between the group means in standard deviation units; Cohen, 1988) by subtracting the non-student samples' mean from the student samples' mean and dividing the difference by the pooled standard deviation.

RESULTS AND DISCUSSION

Results

The purpose of this study was to explore whether or not attitudinal differences in perception, satisfaction, and intention exist between student and non-student samples of internet users. As can be seen from the *t*-test results in Table 2, only 2 of the 23 perception items were significantly different. Specifically, for perceived loading speed, student ratings were higher than non-student ratings

($t = 2.80$, $df = 388$, $p < 0.01$), whereas for perceived help availability, student ratings were lower than non-student ratings ($t = -2.21$, $df = 320$, $p < 0.05$). In addition, two of the four behavioral intention items were significantly different. Specifically, for intention to increase patronage, student ratings were more positive than non-student ratings ($t = 3.72$, $df = 372$, $p < 0.001$), whereas for intention to switch company, the reverse was true ($t = -2.26$, $df = 395$, $p < 0.05$). Students and non-students did not differ significantly on any of the five satisfaction items. It should be noted that had we been more stringent and set the alpha level to be at 0.001 (using a Bonferroni-type adjustment to adjust for inflated Type I error due to multiple tests of correlated dependent variables), then only intention to increase patronage would have differed between the two samples.

However, in order for non significant results to be interpretable, the power of the test needs to be estimated; non significant results are a potential contribution only if the power of the statistical test was high (e.g. 80% or higher; Fagley, 1985). A power analysis indicated that, given the present sample sizes for our study, statistical power was more than 90% to detect a medium effect of 0.50 at $p < 0.05$, two-tailed (Cohen, 1988). This suggests that the analyses were sensitive enough to detect attitudinal differences between the student and non-student samples if such differences existed at a moderate level.

In examining the pattern of mean differences for the 28 non-significant relationships, for 18 items the ratings were essentially identical (i.e. a mean difference of less than 0.10), for four items student ratings were higher than non-student ratings, and for six items student ratings were lower than non-student ratings. Overall, the effect sizes (d) for all the relationships (both significant and non-significant) were small, ranging from 0.003 to 0.396. The average effect size was 0.112.

In sum, there were a few significant differences between student and non-student ratings of the cognitive perception, affective satisfaction, and conative intention statements (in spite of the fact that these two groups of respondents differed substantially on demographic attributes). In fact, out of the 32 mean comparisons, only four were significantly different at the 0.05 level of significance. This is about what would be expected by chance alone. Finally, any differences that were found were small in magnitude.

Table 2
The *t*-test results of attitudinal responses^a

Variable name	Student		Non-student		<i>t</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Perception:						
Flexibility	3.77	1.86	4.10	1.97	-1.57	0.174
Help availability	4.28	1.54	4.68	1.58	-2.21*	0.252
Quick solution	4.38	1.32	4.68	1.44	-1.94	0.221
E-mail response	4.47	1.40	4.69	1.63	-1.22	0.151
Problem explanation	4.61	1.21	4.86	1.44	-1.62	0.185
Appropriate solution	4.71	1.08	4.78	1.42	-0.45	0.053
Alternative access	4.81	1.75	4.74	1.95	0.37	0.038
Web familiarity	4.92	1.50	4.87	1.60	0.32	0.035
Loading speed	5.42	1.26	5.02	1.59	2.80**	0.277
Consistency	5.69	1.06	5.72	1.17	-0.29	0.030
Functionality	5.70	1.19	5.62	1.35	0.62	0.064
Overall quality	5.76	0.95	5.72	1.07	0.36	0.037
Value for money	5.83	1.12	5.79	1.15	0.29	0.031
Updated information	5.94	1.03	5.85	1.20	0.77	0.080
Navigation	5.96	1.14	5.73	1.29	1.88	0.186
Transaction procedure	5.96	1.01	5.91	1.20	0.42	0.043
Direction	6.02	1.00	5.80	1.25	1.96	0.193
Promise fulfilment	6.04	1.18	6.11	1.21	-0.63	0.064
Benefit over cost	6.06	1.26	6.15	1.24	-0.68	0.070
Accuracy	6.07	1.18	6.25	1.12	-1.57	0.159
Security	6.11	1.03	6.09	1.03	0.14	0.014
Accessibility	6.23	0.86	6.11	0.94	1.37	0.142
Confirmation	6.41	1.06	6.37	1.09	0.32	0.033
Satisfaction:						
Telephone satisfaction	4.69	1.71	4.79	1.61	-0.45	0.058
Physical outlet satisfaction	5.14	1.49	5.27	1.33	-0.71	0.097
Overall satisfaction	6.08	0.76	5.97	1.01	1.18	0.124
Service satisfaction	6.14	0.92	6.14	0.99	0.07	0.006
Transaction satisfaction	6.20	0.88	6.13	1.02	0.78	0.081
Intention:						
Company switching ^b	5.10	1.67	5.48	1.63	-2.26*	0.231
Increased patronage	5.78	1.18	5.29	1.29	3.72***	0.396
Channel switching ^b	6.03	1.31	6.04	1.29	-0.03	0.003
Repatronage	6.57	0.86	6.51	1.14	0.63	0.065

Note: ^aSample sizes for the student samples ranged from 81 to 161, and samples sizes for the non-student samples ranged from 143 to 252. ^bScoring of this item is reversed so that higher scores indicate more positive responses.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Discussion of Findings

In general, the results of this study indicate that undergraduate students' attitudinal responses in relation to online retailing services do not differ from that of non-students'. This finding suggests that undergraduate student samples may be appropriate for use in studies aimed at assessing the attitudes of internet users,

particularly in the context of online retailing. Therefore, researchers who want to use students in such research (for reasons of economy, convenience, or education) can find some support here. Because college students are among the most experienced internet users, studies that sample from the college student population are likely to yield results useful for understanding internet users in general (Gallagher, Parsons, & Foster, 2001). In brief, we believe that the use of student samples is warranted as long as the context of the research (e.g. its problem, objectives, and hypotheses) is appropriate, and students are able and willing to provide accurate information.

Our study, however, is limited in scope and generalizability. Therefore, future research is needed to expand the scope of the current study or replicate it using a random sample of internet users. For example, further research is needed to determine whether or not students' attitude towards other online retailing services (e.g. computer software, health and beauty products, clothing, concert tickets, etc.) as well as towards other aspects of internet use do reflect those of the general population of internet users. Also, because we assessed only attitudes, an important extension of this study would be the examination of behavioral outcomes.

APPENDIX

Measurement Items for Assessing Attitude towards Internet Services

Variable name	Statement item
Flexibility	It is difficult to make changes once I submit my online transaction. ^a
Help availability	It is difficult to get help if I have any problem with the company' s internet services. ^a
Quick solution	The company deals with service errors slowly. ^a
E-mail response	The company responds to my e-mail queries slowly. ^a
Problem explanation	When there is a problem, the company provides a clear explanation.
Appropriate solution	The company corrects service errors with appropriate solutions.
Alternative access	It is difficult to find alternative access details (e.g., telephone, fax, address) on the company's web site. ^a
Web familiarity	The company changes the layout of its web site without any notice. ^a
Loading speed	It is slow to view the company's web pages. ^a
Consistency	The company consistently provides quick service
Functionality	The company's online transaction service always works when needed.
Overall quality	The company's overall Internet service performance is excellent.
Value for money	In my view, the company offers good value for money.
Updated information	Information on the company's web site is regularly updated.
Navigation	The company's web site is easy to navigate.
Transaction procedure	The company's online transaction procedures are difficult to understand. ^a
Direction	The online directions (step by step instructions) are clear.
Promise fulfilment	The company always breaks its promise in delivering the Internet service. ^a
Benefit over cost	The company's Internet service provides more benefit than cost to me
Accuracy	Inaccurate service is given when I use the company's online transaction. ^a
Security	I feel safe to use the compan's online transaction services.
Accessibility	Under normal conditions, the company's web site is always accessible.
Confirmation	An immediate confirmation message is given after I complete the online transaction.
Telephone satisfaction	I am pleased when I contact the company via telephone.
Physical outlet satisfaction	When I visit the company's physical outlet, I am satisfied with the service.
Overall satisfaction	I am satisfied with the company's overall services.
Service satisfaction	I am happy with the company's Internet services.
Transaction satisfaction	I am disappointed with the company's online transaction service. ^a
Company switching	It is likely that I will switch to other online company's Internet services in the future. ^a
Increased patronage	I intend to use more Internet services provided by this company in the future.
Channel switching	For the next purchase, I intend to switch to services provided through other channels (i.e., physical outlet or telephone service). ^a
Repatronage	It is likely that I will use the company' s Internet service again in the future.

Note: ^aReverse-coded item.

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