A MULTI-ATTRIBUTE ANALYSIS OF PREFERENCES FOR ONLINE AND OFFLINE SHOPPING: DIFFERENCES ACROSS PRODUCTS, CONSUMERS, AND SHOPPING STAGES

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ABSTRACT

In order to develop the optimal mix of online and offline services for a particular product, marketers must determine which key attributes are perceived by their target market to be delivered better online or offline. A multi-part survey was administered to assess how product attribute evaluations drive differences in online/offline shopping preferences between products, between consumers, and between stages of the shopping experience. Two groups of participants - a student sample and a sample from a national survey panel - were asked to rate their likelihood of shopping online or offline for each of a series of products, both at the search stage and at the purchase stage. They were then asked to rate the importance of attributes that might have differential importance for products like clothing and books, and to rate the extent to which they thought each attribute was delivered better online or offline. For both samples, differences in importance weights assigned to attributes that favor online shopping and attributes that favor offline shopping were key predictors of observed differences in shopping mode preference across products and across consumers.

Keywords: online/offline shopping preferences, multi-attribute analysis

1. Introduction

Online retailing continues to grow rapidly, with online retail sales reaching approximately $104 billion in 2003, a 39% increase over 2002 sales (Johnson 2004). In light of this growth, one of the challenges to researchers and marketers alike is determining the demand for online vs. offline services for different classes of products and for different types of consumers. The overarching question for this consumer domain is what drives a consumer to shop online or offline for a given product. A growing body of research has explored why consumers patronize certain Web sites over others as well as the factors that are likely to motivate consumers to shop online at all. For example, some researchers have examined attributes of Websites such as "atmospherics" that can be manipulated to attract consumers (Sautter, Hyman, and Lukosius 2004), whereas other studies have looked at consumers' general attitude toward shopping online (Zhou, Chiang, and Zhang 2004).

The current research builds on themes developed earlier about shopping on the Internet (Peterson, Balasubramanian, & Bronnenberg, 1997; Alba et al., 1997) and uses recent developments in methodology (Levin, Levin, & Heath, 2003, 2005; Swinyard & Smith, 2003). Peterson et al. (1997) argued that accounts of the potential impact of the Internet must acknowledge the heterogeneity and complexity of consumer markets and the alternative shopping channels available. They challenged researchers to investigate the implicit tradeoffs made by consumers in choosing between the Internet and conventional retailing channels. Alba et al. (1997) recognized the importance of both product differences and consumer differences in the success of the electronic marketplace. The current research was designed to jointly investigate how consumer differences and product differences determine who shops online and who shops offline for different products. As suggested by Peterson et al. (1997), the current paper focuses on the tradeoffs consumers make in evaluating online and offline shopping modes.

Our conceptualization of the process underlying consumers' preferences for shopping online or offline for different products is depicted in Figure 1. Central in this conceptualization is that products are evaluated for shopping online or offline in terms of the extent to which key attributes are perceived to be delivered better online or offline (we will refer to these as "attribute values") and their perceived importance for that particular product ("attribute weights"). The overall utility for shopping online or offline for a particular product is the product of attribute value by attribute weight, summed over attributes. This attribute-level conception of online/offline shopping preferences provides a common ground for examining both product differences and consumer differences.

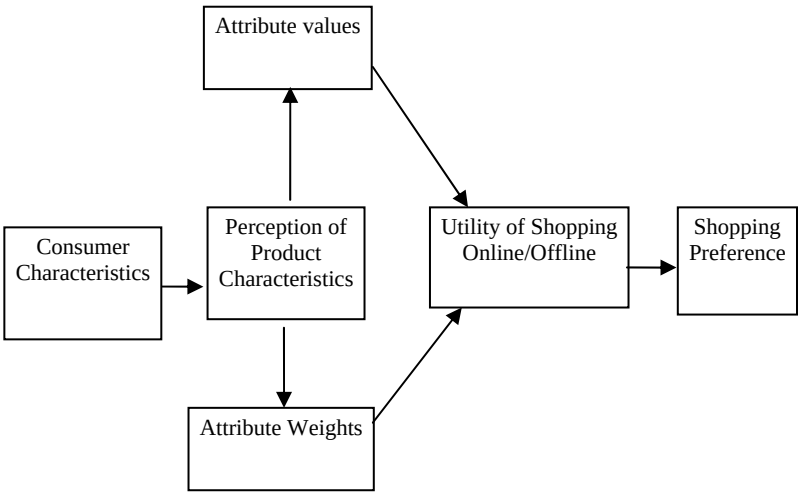

Figure 1. Conceptual Model of the role of product and consumer characteristics in online/offline shopping preferences.

What Types of Products are Most Likely to be Purchased Online and Offline?

Earlier studies have focused on why online shopping differs across products. Several studies have shown that "high touch" products that consumers feel they need to touch, smell or try on are those that require an offline presence at least at the final purchase stage (Chiang and Dholskia 2003; Lynch, Kent, and Srinivasan 2001). Levin et al. (2003) showed that the special importance of being able to personally handle and inspect the product before purchasing underlies the preference for traditional brick-and-mortar shopping methods for products like clothing, sporting goods, and health and grooming products. At the other extreme, "low touch" products like airline tickets and computer software are products that generally favor online services because of the special importance placed on shopping quickly. In between this spectrum are products like books and CDs where some important attributes like large selection are better delivered online while other important attributes like personal service are better delivered "virtually" offline or by providing surrogate experiences through feedback provided by others.

Using a classification scheme similar to the high touch-low touch distinction, Girard, Silverblatt, and Korgaonkar (2002) adopted the Ford, Smith, and Swasy (1988) typology of search, experience, and credence products to examine the influence of product class on preference for shopping on the Internet. Girard et al. found that preference for shopping online was particularly strong for search products like books and PCs where most of the key attributes can be determined online. By contrast, Alba et al. (1997) point to the greater reliability of experiential information coming from in-store visits. However, Klein (1998) argues that the multimedia capabilities of the Web can turn experience goods into search goods by substituting in store visits with virtual encounters.

Related to the conclusions of Klein (1998) and Girard et al. (2002), Peterson and Merino (2003) describe the Internet as replacing many of the traditional search methods such as word-of-mouth and hands-on-experience. Consequently, consumers may focus less on brand information and more on the attributes of their product-searching goal. These authors call for focus on moderators of consumer information search behavior in the context of the Internet. In the present study we focus on attribute-level analyses of consumer preferences and, because we believe that different product attributes play different roles in search and purchase behaviors, search behavior is examined separately from final purchase for different products.

What Types of Consumers are Most Likely to Purchase Online and Offline?

In sampling a nationwide panel of consumers who had online capabilities at home, Swinyard and Smith (2003) compared those who did and did not make purchases online during the preceding holiday shopping season. They found that online shoppers were: younger, wealthier, better educated, more computer literate and more likely to spend time on the computer, more likely to find online shopping to be easy and entertaining, and less fearful about financial loss resulting from online transactions. Bellman, Lohse, and Johnson (1999) also found Internet shoppers to be younger, more educated and wealthier and to have a more "wired lifestyle," but also to be more time-constrained than non-Internet shoppers. Childers et al. (2001), like Klein (1998), found perceived substitutability of

the electronic environment for personally experiencing products to be an important predictor of online shopping attitudes.

Comparisons across Stages

Paralleling models of consumer behavior in more traditional environments, Haübl and Trifts (2000) suggest that potential online consumers use a two-stage process of screening products to identify a promising subset and then comparing these products to make a purchase decision. The current paper investigates the extent to which such processes lead to differential preference for online versus offline modes across shopping stages. Perceived risk of online purchasing in the form of concern about product returns and refunds and the security of transactions on the Internet can deter online shopping at the final stage (Levin et al., 2005). This is a particularly important issue in contemporary marketing practice because those consumers who switch modes between the "search" stage and the "final purchase" stage are utilizing the resources of one shopping mode while providing profit to the other mode.

Multi-dimensional Analysis

Li and Zhang (2002) completed an analysis of 35 empirical studies of online shopping attitudes and behavior. While they found a number of articles that focused on consumer characteristics or demographics, or product characteristics, they found few studies that looked at these characteristics in combination. The current study extends the methodology used by Swinyard and Smith (2003) to address the question of who shops online and the methodology used by Levin et al. (2003, 2005) to address the question of why online shopping methods are preferred for some products but not others. By addressing both questions in a single study we attempt to provide a more comprehensive view of online vs. offline shopping preferences.

2. Hypotheses and Research Questions

We formulate and test several hypotheses of aggregate-level shopping preferences based on earlier studies of consumer shopping on the Internet. We then describe a set of new research questions dealing with the combined effects of product characteristics and consumer characteristics as depicted in our conceptualization in Figure 1.

H1. Attributes related to the search process will be assigned higher importance for search products like airline tickets and books while attributes related to the delivery and test of the product will be assigned higher importance for experience products like clothing.

H2. Attributes related to the search process like shop quickly, large selection, and trusted brand name will be rated as being better delivered online than offline, while attributes related to the experience process like ability to see-touch-handle the product and attributes related to the delivery process such as personal service and speedy delivery will be rated as being better delivered offline than online.

H3. Differences in online preference across products will be captured at the attribute level. Preference for online shopping will be exhibited for products with higher online utility based on the fact that their most important attributes are perceived to be delivered better online and conversely for preference for offline shopping.

H4. Based on perceived risk of online transactions, online shopping preference should be less at the purchase stage than at the search stage.

The emphasis in this study will be on the quantitative analysis of the contributions of product characteristics and consumer characteristics in online/offline shopping preferences. Thus the following new set of research questions is addressed.

1. To what extent can individual consumer differences in online/offline shopping preferences for a product be attributed to the assignment of different attribute importance weights by different consumers?
2. To what extent are these differences related to characteristics such as age, sex, income and Internet usage?

3. Methods

Participants

Sample 1 consists of data from undergraduate students from a large mid-western American university. Sample 2 consists of data from self-selected U.S. respondents via an online survey panel, Greenfield Online. This allows testing of the generality of results from the student sample and provides us with a sample from different geographic regions with a wide range of socio-demographic characteristics. For shorthand purposes, the latter sample will be referred to as the "nationwide" sample.

The university sample consists of 199 persons (123 males, 76 females) all of whom have Internet access, with the median age 21 (range 19-39). Median monthly disposable income is $229. Median reported amount spent on online purchases is $50 per month. The nationwide U.S. sample consists of 214 persons (51 males, 163 females) all of whom have Internet access. The sample comes from a commercial Internet panel drawn from over 5 million

members of Greenfield Online. Median age equals 42 (range 25-75). Sixty-one percent are married. Median monthly disposable income is $311. Median reported amount spent on online purchases is $147 per month.

Procedure

Both samples were given a multi-part survey involving five product classes. The nationwide panel was administered the survey online. The university sample completed paper-and-pencil surveys. In selecting products we started with Levin et al's (2003) grouping of products into "high touch," "low touch" and "mixed" categories, and then reduced the number of products from 8 to 5 in order to minimize respondent fatigue. Clothing was the high touch product and airline tickets were the low touch product. Books, electronic entertainment products (defined to the participants as TVs, stereos, CD players, etc.), and computer products (defined to the participants as software, hardware, accessories) were the mixed products.

Part 1 Participants rated the likelihood that they would shop online or offline for each of the products. For each product they separately rated the likelihood that they would search for and compare options online or offline and that they would make a final purchase online or offline. For shorthand purposes, the successive stages are referred to as "search" and "purchase." The 1-6 scale ranges from "very much prefer offline" to "very much prefer online," with higher numbers representing greater preferences for online shopping.

Part 2 Participants rated the importance of each attribute for each product on a 1 to 5 scale ranging from "not at all important" to "extremely important." Based on prior research and pilot testing, the attributes selected were: shop quickly, large selection, best price, shopping enjoyment, ability to see-touch-handle the product, personal service, speedy delivery, no hassle exchange, having a trusted brand name.

Part 3 For each product the participant rated the extent to which each of the attributes is delivered better online or offline. The 7-point scale ranges from "shopping offline is much better" to "shopping online is much better." (The use of different numbers of points for the different scales in Parts 1-3 was meant to make the parts more distinct to the respondent.)

Part 4 A demo/psychographic survey was administered, including age, sex, education level, disposable income, amount spent on online shopping, and self-rated computer literacy.

4. Results and Discussion

We will first present aggregate data for each sample for Parts 1-3 of the survey, culminating in an attribute-level explanation of differences in online/offline shopping preferences across products. (For exposition purposes, data for Parts 2 and 3 will be presented before data for Part 1 because the former are used to explain the latter.) Then data on individual consumer differences will be presented.

Attribute Importance Ratings

Table 1 gives the mean importance rating on a scale of 1 (not at all important) to 5 (extremely important) for each attribute for each product and each sample. H1 was partially supported. While attributes like "best price," "no hassle exchange," "large selection," and "speedy delivery" were rated as important for all products, there were notable exceptions. Bonferroni follow-up tests revealed that "enjoying the shopping experience" and "see-touch-and-handle the product" were less important for airline tickets, a "search" product, than for other products but were most important for clothing, an "experience" product ($p < .01$ in each case).

Table 1. Mean Importance Ratings

(a) Nationwide Sample

	Enjoy	**Shop quick**	**Large select**	**Best price**	**See-touch**	**Personal service**	**Speedy delivery**	**No hassle exchange**	**Brand name**
Airline tickets	2.90 (1.44)	3.83 (1.24)	4.20 (1.03)	4.71 (0.88)	2.57 (1.57)	4.02 (1.25)	4.26 (1.06)	4.42 (1.09)	4.28 (1.05)
Books	3.55 (1.29)	3.60 (1.29)	4.37 (0.92)	4.61 (0.84)	3.35 (1.40)	3.93 (1.16)	4.15 (1.09)	4.46 (0.97)	3.77 (1.32)
Electronic	3.73 (1.13)	3.83 (1.07)	4.47 (0.84)	4.79 (0.65)	4.07 (1.11)	4.34 (0.97)	4.35 (0.94)	4.69 (0.70)	4.51 (0.83)
Clothing	3.98 (1.14)	3.68 (1.22)	4.46 (0.91)	4.69 (0.75)	4.35 (1.03)	4.17 (1.09)	4.22 (1.01)	4.66 (0.81)	4.12 (1.08)
Computer	3.65 (1.15)	3.75 (1.16)	4.35 (0.86)	4.74 (0.69)	3.82 (1.29)	4.36 (0.95)	4.35 (0.91)	4.69 (0.69)	4.50 (0.83)

(1-5 scale) (Standard deviations in parentheses)

(b) University Sample

	Enjoy	Shop quick	Large select	Best price	See-touch	Personal service	Speedy delivery	No hassle exchange	Brand name
Airline tickets	2.28 (1.16)	3.57 (1.15)	4.16 (0.84)	4.76 (0.61)	2.14 (1.25)	3.45 (1.16)	4.06 (0.96)	4.29 (0.96)	3.98 (0.94)
Books	2.81 (1.19)	3.17 (1.28)	4.12 (1.07)	4.33 (0.92)	3.28 (1.33)	3.35 (1.07)	3.92 (1.01)	4.27 (0.93)	2.73 (1.30)
Electronic	3.55 (1.12)	2.77 (1.18)	4.47 (0.74)	4.65 (0.75)	4.11 (1.05)	4.14 (0.91)	4.08 (0.94)	4.53 (0.76)	4.43 (0.90)
Clothing	3.80 (1.24)	3.02 (1.30)	4.43 (0.82)	4.29 (0.93)	4.60 (0.78)	3.80 (1.05)	3.73 (1.14)	4.49 (0.80)	4.07 (1.03)
Computer	2.84 (1.20)	3.07 (1.24)	4.10 (0.92)	4.62 (0.74)	3.40 (1.31)	4.09 (0.99)	4.03 (0.96)	4.43 (0.79)	4.38 (0.85)

Ratings of Attributes as Better Delivered Online or Offline

Table 2 gives the mean rating of each attribute for each product on a scale from 1 (shopping offline is much better) to 7 (shopping online is much better). Consistent with H2, for both samples Bonferroni tests revealed that attributes related to the search process such as "shop quickly," "large selection" and "best price" are rated as better when shopping online while attributes related to the experience and delivery processes such as "see-touch-and-handle-the-product," "speedy delivery," and "no hassle exchange" are rated as better when shopping offline ($p < .01$ in each case). In both samples, participants rated "enjoying the shopping experience" as better achieved offline than online, for all products except airline tickets. Furthermore, participants were largely indifferent in perceiving that achieving a trusted brand name would be better online or offline.

Table 2. Mean Attribute Ratings

(a) Nationwide Sample

	Enjoy	Shop quick	Large select	Best price	See-touch	Personal service	Speedy delivery	No hassle exchange	Brand name
Airline tickets	5.38 (1.85)	5.45 (1.69)	5.52 (1.67)	5.74 (1.61)	3.38 (1.80)	3.89 (2.08)	4.89 (1.87)	4.08 (1.91)	4.66 (1.66)
Books	3.46 (2.13)	4.69 (2.00)	4.64 (2.09)	4.94 (1.89)	2.41 (1.74)	3.24 (1.95)	3.61 (2.12)	3.46 (2.00)	4.11 (1.72)
Electronic	3.61 (1.98)	4.39 (1.92)	4.56 (1.85)	4.60 (1.84)	2.18 (1.66)	3.11 (1.92)	3.50 (1.98)	3.25 (1.84)	3.96 (1.66)
Clothing	2.42 (1.93)	3.53 (2.21)	3.43 (2.14)	3.52 (1.97)	1.72 (1.47)	2.70 (1.82)	2.86 (1.96)	2.78 (1.85)	3.38 (1.74)
Computer	3.89 (1.92)	4.38 (1.88)	4.57 (1.92)	4.69 (1.78)	2.17 (1.58)	3.12 (1.83)	3.61 (1.95)	3.27 (1.85)	3.90 (1.71)

(1 = offline much better, 7 = online much better) (Standard deviations in parentheses)

(b) University Sample

	Enjoy	Shop quick	Large select	Best price	See-touch	Personal service	Speedy delivery	No hassle exchange	Brand name
Airline tickets	4.54 (2.05)	5.89 (1.60)	5.89 (1.48)	5.98 (1.34)	1.97 (1.37)	2.27 (1.44)	4.19 (1.92)	3.12 (1.55)	4.06 (1.35)
Books	2.99 (1.88)	5.20 (1.78)	5.26 (1.82)	5.52 (1.41)	1.69 (1.34)	2.22 (1.40)	3.27 (1.87)	2.63 (1.49)	3.70 (1.12)
Electronic	2.90 (1.76)	4.82 (1.76)	5.39 (1.70)	5.20 (1.57)	1.53 (1.12)	2.11 (1.32)	3.30 (1.82)	2.64 (1.34)	3.73 (1.25)
Clothing	2.76 (1.96)	4.88 (1.97)	4.67 (1.96)	4.71 (1.70)	1.37 (0.87)	2.10 (1.30)	3.12 (1.84)	2.46 (1.30)	3.63 (1.31)
Computer	3.60 (1.94)	5.01 (1.72)	5.28 (1.75)	5.28 (1.53)	1.71 (1.12)	2.22 (1.35)	3.30 (1.74)	2.79 (1.42)	3.79 (1.34)

Online/Offline Preference Ratings

Table 3 gives the mean rating of online/offline shopping preference for each product at each stage (search and final purchase) for each sample. Ratings are on a scale of 1 (very much prefer offline) to 6 (very much prefer online). Consistent with H3, online preferences are greatest in each sample for airline tickets and offline preferences are greatest for clothing. For all products, online preference is greater at the search stage than at the purchase stage, thus supporting H4. The drop-off differs across products, being greatest for electronic products, but is remarkably similar across samples. Within each sample, analysis of variance confirmed that online/offline preferences differed significantly across products, $F(4,852) = 66.84$ and $F(4,788) = 160.14$ for the nationwide and student samples, respectively; and that preferences differed significantly across shopping stages, $F(1,213) = 103.76$ and $F(1, 197) = 189.37$ for the respective samples. For each sample the difference in drop-off across stages for the different products resulted in a significant product by stage interaction, $F(4,852) = 9.47$ and $F(4,788) = 11.47$ for the respective samples, $p < .01$ in each case.

Table 3. Mean Online/Offline Preference Ratings

(a) Nationwide Sample

	Airline Tickets	**Books**	**Electronic**	**Clothing**	**Computer**
Search	5.09 (1.53)	3.84 (1.89)	3.83 (1.93)	2.95 (1.85)	4.07 (1.83)
Purchase	4.21 (1.88)	3.23 (1.92)	2.51 (1.62)	2.37 (1.65)	3.22 (1.80)

(1 = much prefer offline, 6 = much prefer online) (Standard deviations in parentheses)

(b) University Sample

	Airline Tickets	**Books**	**Electronic**	**Clothing**	**Computer**
Search	5.58 (0.92)	3.68 (1.73)	3.64 (1.83)	2.51 (1.69)	4.28 (1.61)
Purchase	4.67 (1.47)	2.93 (1.58)	2.26 (1.36)	1.87 (1.21)	3.41 (1.64)

Explaining Online/Offline Shopping Preference Differences between Products

The differences discussed above support the importance of product-attribute perceptions in driving online/offline shopping preferences for different products. We now directly examine the extent to which differences in online/offline shopping preferences across products can be accounted for by a weighted sum of attribute values. The attribute values are the ratings in Table 2 of the extent to which a particular attribute for a particular product is thought to be better delivered online or offline. The weights correspond to the importance ratings in Table 1. For a given product, the corresponding values in the cells of Tables 1 and 2 are multiplied together and then the resultant values are summed across attributes (columns) to arrive at a weighted sum for each product. These weighted sums are then correlated with the product evaluations in Table 3, separately for the Search and Purchase stages of each product. For the Search stage, "speedy delivery" and "no hassle exchange" are excluded from the analysis because these represent post-search factors; for the Purchase stage, "large selection" is excluded because it pertains to search. We thus arrive at two separate weighted sums for each product, one for the Search stage and one for the Purchase stage. The resulting correlations between the weighted sums and mean online/offline preference ratings are as follows: for the nationwide sample, $r = .98$ and .86 for the Search and Purchase stages, respectively; for the University sample, $r = .89$ and .83 for the respective stages. Thus, consistent with H3, different preferences for shopping online or offline for different products can be well accounted for by the extent to which attributes that are thought to be important for a given product are perceived to be better delivered online or offline. This was true for both the university and nationwide samples.

Individual Differences

Whereas the previous sections focus on online/offline preference differences between products averaged across consumers, this section focuses on differences between consumers. We examine the extent to which the variance observed in Table 3 can be explained for each product at each stage. The validity of these individual differences in online/offline shopping preference ratings is supported by significant correlations between these ratings and reported actual online purchasing behavior for both samples. That is, respondents who showed the greatest online preference in their ratings also indicated the most spent on Internet shopping.

We start by examining how demographic variables relate to differences in attribute weighting within each sample. For this set of analyses, the individual difference measures of age, gender, disposable income, and self-rated computer literacy were correlated with attribute weights averaged across products. Across samples, self-rated computer literacy had the greatest influence on attribute weighting. For both samples, those higher in computer literacy placed lesser importance on the need to see-touch-handle the product, $r = -.26$ and $-.23$, respectively, for the nationwide and student samples, $p < .001$ in each case. For the nationwide sample, higher computer literacy was

associated with greater weight placed on enjoying the shopping experience ($\underline{r}$ = .16, $\underline{p}$ < .05). There were also tendencies for higher computer literacy to be associated with greater weight for large selection ($\underline{r}$ = .13, $\underline{p}$ = .056), speedy delivery ($\underline{r}$ = .13, $\underline{p}$ = .068), and shopping quickly ($\underline{r}$ = .12, $\underline{p}$ = .07). For the student sample, higher computer literacy was associated with lower importance of personal service ($\underline{r}$ = -.18, $\underline{p}$ = .01). Within the student sample, higher disposable income was associated with lower importance of the need to see-touch-handle the product ($\underline{r}$ = -.14, $\underline{p}$ < .05) and greater importance placed on trusted brand name ($\underline{r}$ = .16, $\underline{p}$ < .05). Within the nationwide sample, age was positively related to need for speedy delivery ($\underline{r}$ = .14, $\underline{p}$ < .05). Gender was not a factor for any attribute in either sample.

Next, individual differences within products are examined. Table 4 summarizes the regression analyses used to determine the extent to which differences between consumers' online/offline shopping preferences for each product at each stage can be accounted for by the various measures of individual difference. Stepwise regression analysis was used where the initial step (Step 1) was entering the weighted sum of attribute values for each consumer. The next step (Step 2) was entering a set of demographic variables consisting of age, gender, disposable income, and self-rated computer literacy to determine their contribution beyond individual differences in attribute weights[1].

Individual differences in assigning values and weights to the different attributes of a product (Step 1) accounted for a significant proportion of the variance in online/offline preferences for each product at each stage for each sample. The change in R^2 was statistically significant ($p < .05$) or approached significance ($p < .10$) in 7 out of 10 tests for the university sample and for 8 out of 10 tests for the nationwide sample.

Among the demographic variables, the single best predictor of online/offline shopping preferences was self-reported computer literacy which was a significant source of variance or approached significance for 9 out of 10 of the product-by-stage level regression analyses for the university sample and 5 out of 10 for the nationwide sample. Disposable income was positively related to online shopping preference for 5 out of 10 product-by-stage combinations for the nationwide sample but not for the university sample where the range was restricted. Other factors had product-specific effects. In both samples females were more likely than males to prefer online shopping for clothing at both stages. Within the university sample, males were more likely to prefer online shopping for electronic and computer products. Within the nationwide sample, older consumers were more likely to prefer online search for computer products, and within the university sample, younger students were more likely to prefer online search for electronic products.

Table 4A. Summary of Regression Analysis: Nationwide Sample

Airline Tickets – Search						Airline Tickets - Purchase				
Model	R^2	*F* change	*df*	*p*		Model	R^2	*F* change	*df*	*p*
1	.314	96.91	1;212	.000		1	.091	21.23	1;212	.000
2	.338	1.94	4;208	.105		2	.155	3.91	4;208	.004

Books – Search						Books - Purchase				
Model	R^2	*F* change	*df*	*p*		Model	R^2	*F* change	*df*	*p*
1	.090	20.86	1;212	.000		1	.170	43.53	1;212	.000
2	.130	2.41	4;208	.050		2	.205	2.24	4;208	.066

[1] The model regressed in Table 4 can be stated as follows:

$$P_{pi} = \Sigma_j w_{ji} \times \nu_{ji} + \varepsilon_i$$

where P_{pi} is the online-offline preference for product p by individual i; w_{ji} and ν_{ji} are the weight and value, respectively, assigned by individual I to attribute j; and ε_i is a vector of demographic variables for individual i. Before applying this model, we tested for normality of the criterion measures (preference ratings on a 1-6 scale). As can be seen in Table 3, measures such as search and purchase of airline tickets and search for computer products display strong online preferences, and measures such as search and purchase of clothing and purchase of electronic products display strong offline preferences. Not surprisingly, skewness and kurtosis were beyond acceptable limits for these measures. Additional analyses were performed on these measures to normalize them, using cubes or square roots of the rating data depending on the direction of skew. The only substantive difference from results reported in Table 4 was for airline search for the university sample which was the only variable with skew > 2 and kurtosis >7 where the influence of consumer demographics was reduced from $p < .05$ to $p < .07$

Electronic Products – Search						Electronic Products - Purchase				
Model	R^2	*F* change	*df*	*p*		Model	R^2	*F* change	*df*	*p*
1	.090	21.02	1;212	.000		1	.126	30.49	1;212	.000
2	.157	4.10	4;208	.003		2	.182	3.55	4;208	.008

Clothing – Search						Clothing - Purchase				
Model	R^2	*F* change	*df*	*p*		Model	R^2	*F* change	*df*	*p*
1	.172	43.90	1;212	.000		1	.120	29.04	1;212	.000
2	.188	1.08	4;208	.368		2	.178	3.64	4;208	.007

Computer Products – Search						Computer Products - Purchase				
Model	R^2	*F* change	*df*	*p*		Model	R^2	*F* change	*df*	*p*
1	.152	37.93	1;212	.000		1	.152	37.98	1;212	.000
2	.224	4.83	4;208	.001		2	.185	2.12	4;208	.078

Model 1: weighted sum of product attributes, Model 2: add consumer demographic differences

Table 4B. Summary of Regression Analyses: University Sample

Airline Tickets – Search						Airline Tickets - Purchase				
Model	R^2	*F* change	*df*	*p*		Model	R^2	*F* change	*df*	*p*
1	.020	4.00	1;196	.047		1	.067	14.03	1;196	.000
2	.039	0.95	4;192	.435		2	.118	2.80	4;192	.027
3	.073	1.35	5;187	.246		3	.153	1.52	5;187	.185

Books – Search						Books - Purchase				
Model	R^2	*F* change	*df*	*p*		Model	R^2	*F* change	*df*	*p*
1	.024	4.79	1;195	.030		1	.021	4.09	1;195	.045
2	.037	0.65	4;191	.625		2	.056	1.80	4;191	.131
3	.057	0.77	5;186	.571		3	.072	0.63	5;186	.680

Electronic Products – Search						Electronic Products - Purchase				
Model	R^2	*F* change	*df*	*p*		Model	R^2	*F* change	*df*	*p*
1	.043	8.86	1;196	.003		1	.042	8.59	1;196	.004
2	.124	4.45	4;192	.002		2	.102	3.22	4;192	.014
3	.143	0.83	5;187	.529		3	.129	1.13	5;187	.345

Clothing – Search						Clothing - Purchase				
Model	R^2	*F* change	*df*	*p*		Model	R^2	*F* change	*df*	*p*
1	.026	5.13	1;195	.025		1	.038	7.79	1;196	.006
2	.126	5.49	4;191	.000		2	.098	3.18	4;192	.015
3	.164	1.69	5;186	.139		3	.137	1.69	5;187	.138

Computer Products – Search						Computer Products - Purchase				
Model	R^2	*F* change	*df*	*p*		Model	R^2	*F* change	*df*	*p*
1	.100	21.70	1;196	.000		1	.086	18.35	1;196	.000
2	.159	3.39	4;192	.011		2	.165	4.54	4;192	.002
3	.171	0.53	5;187	.752		3	.l86	0.97	5;187	.438

Model 1: weighted sum of product attributes, Model 2: add consumer demographic differences
Model 3: add consumer personality differences

5. Conclusions

Preferences for shopping online or offline were shown to vary across products, consumers, and stages of the shopping experience. Some of our findings concerning individual differences in online/offline shopping preferences are consistent with those reported by Swinyard and Smith (2003). However, many of these differences are product-specific. To a great extent, these differences could be accounted for by differential importance placed on product

attributes that are perceived to be better delivered online or offline. When attributes such as large selection and shopping quickly are predominant, online shopping is preferred. When attributes such as personal service and ability to see-touch-handle the product are predominant, offline shopping is preferred.

Theoretical Implications

Our approach of examining how attribute-level perceptions drive preferences for online vs. offline shopping can be useful to those trying to model this important issue in consumer behavior. We demonstrated at the aggregate level that differences between products could be accounted for by the differential weighting of attributes that are perceived to be better online or offline. At the individual consumer level a significant portion of the variance in online/offline preferences within a product class was accounted for. We thus encourage future researchers addressing the questions of who prefers to shop online and who prefers to shop offline and for which products, to include in their models parameters corresponding to both the value and weight assigned to each key product attribute.

Furthermore, we demonstrated the need to allow parameters to vary as a joint function of product and consumer characteristics. For example, females were more likely than males in our samples to prefer online shopping for clothing whereas males were more likely than females to prefer online shopping for electronic and computer products. Thus, those who study individual differences in online shopping preference need to consider that these may play out differently for different products and, conversely, for those who study product differences.

Managerial Implications

The findings have implications for online retailers, whether they are "pure" online retailers or multi-channel retailers. For example, the results show that for electronics products, a no hassle exchange is thought to be delivered better offline and a large selection is thought to be delivered better online. Thus, for a pure electronics e-tailer such as SWEETronics, there is a need to convince customers that they can exchange merchandise as quickly and easily as possible through the mail. In contrast, a multi-channel electronics retailer, such as Best Buy, would be wise to emphasize that customers can enjoy great selection, prices, and convenience by purchasing on the website, and can exchange merchandise at their local Best Buy store, if necessary. Individual consumer differences can lead to different marketing approaches for different segments. For example, those who perceive themselves to be more computer literate have a lesser need for personal service or for "hands-on" shopping experience, so there is less need to address these issues with this segment.

Limitations and Directions for Future Research

The results and conclusions of this study were limited by the particular products, product attributes and samples of consumers selected. Because the respondents in the current study are more computer savvy and heavier Internet users than the general population of consumers, the absolute numbers representing preferences for online shopping are probably elevated in comparison to the general population. Nevertheless, despite diverse sociodemographic characteristics across the two samples, those factors that influence online/offline shopping preferences appear to be similar and are thus likely to influence preferences for the lighter Internet user as well. It is particularly worthy of note that the widespread variation in preferences for Internet shopping across products, consumers and shopping stages was well captured at the attribute evaluation level for each sample.

We encourage future researchers who attempt to provide a comprehensive analysis of online/offline shopping preferences to include a wide diversity of products and consumers. Conversely, marketers interested in the optimal mix of online and offline services for their product would be advised to focus in depth on those product attributes that are critical to their target market and how these attributes would be perceived if delivered online or offline.

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