Repeat Buying Behavior for Ornamental Plants: A Consumer Profile

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This paper used an electronic survey conducted in Texas to study the main factors affecting the frequency of purchase, measured in transactions per month, for ornamental plants. While we found several differences in demographic characteristics of respondents, the two major factors impacting the frequency of buying for ornamental plants were the purpose of the purchase (self use vs. gifts) and seasonality. Respondents with a college degree in the older age groups, and higher income levels had a lower frequency of buying while individuals with medium income levels increase frequency of buying. Several ornamental plant attributes were also included in the analysis.

The floriculture and nursery industry has evolved rapidly in recent years. The introduction of mass-market retailers such as supermarkets, department stores and Internet-based businesses has changed the marketing paradigm of floriculture and nursery products. Floriculture and Nursery crops, often referred to as the green industry are an important sector of the U.S. agricultural economy with grower cash receipts of $16.9 billion in 2006 (Jerardo, 2007). All green industry sectors, including growers, landscaping design and maintenance, and retail, are estimated to contribute over $148 billion in economic impacts to the U.S. economy and add almost 2 million jobs (Hall et al., 2006).

In general, the demand for all products is highly dependent on its characteristics or attributes, which include satisfying nutritional needs and/or taste (Hanemann, 1984). Even though ornamental plants do not satisfy any nutritional needs, they possess other important attributes that influence the buying decision including their aesthetic value; In addition to ornamental attributes, consumer demand for ornamental products is also affected by consumer demographics and the buying occasions and periods (Palma and Ward, 2010). Understanding how consumers make choices of whether to buy ornamental products or not, and the intensity and frequency of purchase is essential to understanding ornamental demand. Floriculture and nursery products are purchased for various reasons such as expression of love or friendship, a way to express thankfulness or appreciation, and beautification purposes either for self use or as gifts. Plant and flower attributes are not easily quantified and very subjective; therefore the satisfaction (utility) gained from the consumption of ornamental products can be influenced by the characteristics or preferences of buyers (demographics) and the reasons for buying the products (Girapunthong, 2002). This situation becomes evident during special seasonal buying occasions (i.e., Mother's Day, Valentine's Day, etc), where the consumption of ornamental products is substantially higher compared to non-calendar occasions.

The main objective of this paper is to analyze the effects of product attributes, consumer characteristics (demographics) and seasonal factors affecting consumer demand for ornamental plants. Specifically, we will look at the frequency of buying, measured in transactions per month as a function of ornamental plant features, socio-economic characteristics, and consumer habits (including seasonality). Frequency of purchasing multiplied by expenditures per transaction yields total sales for the ornamental plant industry. Understanding what factors influence buyers to increase frequency of purchasing is essential for ornamental plant grower's profitability.

There is extensive literature regarding demand analysis for traditional agricultural products, such as milk (Gould et al., 1990), meat (Glynn et al., 2010), fruit and vegetables (Rickard et al., 2009), etc.; however, studies on the demand side for floriculture and nursery products are very limited in the literature, with the

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majority of consumer demand and preferences studies focusing in floricultural crops. Miller (1983) performed an extensive sub-sector analysis for the fresh cut-flower industry in the U.S. by analyzing the structure, conduct and performance of the existing conditions of the industry in an attempt to predict future trends. Miller observed that there were special calendar occasions when the demand for flowers was substantially higher and other non-calendar occasions where the demand was substantially lower. He also determined that the demand for flower arrangements was inelastic, meaning that consumers are not highly responsive to changes in price of floral products.

Tilburg (1984) analyzed a panel of cut flower and potted plant consumers in the Netherlands to relate aspects of consumer behavior to marketing variables and demographic characteristics of households. He identified three market segments: the first segment consisted of 44 percent of the households and was sensitive to prices but insensitive to national advertisements; the second segment consisted of 40 percent of the households, and was insensitive to both prices and advertisements; and the third segment, with 13 percent, was sensitive to both prices and advertising.

Behe (1989) analyzed consumer floral purchasing behavior of Pennsylvanians at the retail level. She recommended three ways to segment retail flower markets: by product, volume of purchase, and by location of the purchase. Behe et al. (1992a) carried out an analysis of consumer purchases of floral products in Ohio supermarkets using principal components analysis that yielded 34 independent factors accounting for 64% of the total variance affecting floral purchases. These factors were grouped into five main categories, including, product, consumer, store, use (gift), and location. Behe et al. (1992b) followed up on her previous study and applied cluster analysis to identify the most important factors affecting floral buying decisions by market segments. She used demographic characteristics and purchase factors identified in her previous work to profile market segments and distinguishing elements. Becker (1993) studied differences in service quality between supermarkets and florists in Texas. He found that the differences on the types of retail outlets were based on the types of products sold, custom design and other in-store services, delivery options and convenience. Rimal (1998) analyzed the effects of generic and brand promotions on sales of fresh cut-flowers at the retail level in the U.S.

Girapunthong (2002) analyzed the demand drivers for fresh cut-flowers and their substitutes in the U.S. Girapunthong found that all direct price effect coefficients with the seasonal and actual variables were statistically significant and changes in the relative prices had a significant impact on flower market shares among fresh cut-flowers, potted flowering plants, and dry/artificial flowers. Ward (2004) evaluated the impacts of the Flower Promotion Organization (FPO) advertising campaign on cut-flower sales, concluding that the promotions have impacted the demand for flowers through increasing buyer frequency and through attracting new buyers. He found that about 87 percent of the increase in demand for the promotional programs is from the increased number of transactions per buyer. Ward found that the demographic group that responded the most to the promotional program were female buyers that purchase flowers for self-use. This was consistent with the target of the FPO promotion program. Yue and Behe (2008) analyzed consumer preferences for different floral retail outlets. They used a consumer panel data collected by the American Floral Endowment from 1992 to 2005 were used to evaluate consumers' choice of different floral retail outlets among box stores, traditional freestanding floral outlets, general retailer, other stores, and direct-to-consumer channels. Palma and Ward (2010) estimated ornamental demand for four different ornamental products, including cut flowers, plants, dry/artificial and outdoor. They divided demand into two components, market penetration and buying frequency. They concluded that demand drivers for ornamental consumption was driven by the entry of new buyers rather than repeat buying customers increasing their number of transactions.

When studying the aforementioned literature regarding the demand for floral and nursery products, it is apparent that there are many factors that affect their demand. These factors can be grouped into three main categories: external, controlled, and seasonal factors. External or macro-factors of demand are those affecting industry businesses but for which firms have no mechanism to change their output. These include inflation, wages, prices, unemployment rate, demographic factors and other macro-economic variables. Controlled factors of demand are those factors that may be used to influence perceptions and awareness with the use of promotions, product development and innovations. Seasonal factors are also important for floral and ornamental plants because of the nature of the products and the reasons for buying (Ward, 1997).

Because ornamental plants are not satisfying nutritional needs like most food products, in a typical month the percentage of the population that buys flowers and ornamental plants is relatively low. Hence, it is important to understand how ornamental plant buyers make the choice to purchase and to have a measure or profile of consumer purchase intensity. Demand analyses for ornamental products differ among other agricultural commodities in the sense that for other agricultural commodities, the quantity consumed is used directly in the analysis. In the case of floriculture products, a consumer purchase quantity is ambiguous and closely tied to the type of ornamental plant; for example, a quantity of one may refer to one single stem rose, or an arrangement of a dozen roses and several other plants. Hence, this study replaces quantity (number of units) observed by the number of transactions given on a defined period of time. In doing so, all properties (or restrictions) of the demand function are still satisfied.

Repeat buying occurs when a consumer buys a product more than once in a given period of time. Consumers are influenced by pre-purchase needs, perspectives, attitudes, the experience of previous usage, and external influences such as advertising and promotion programs, retail availability, personal selling and word of mouth effects, and differences in products, services and prices. The consumer has to make decisions regarding what products to buy and at what prices and where to buy the products. All of these characteristics form a post-buying experience in the customer's mind after the purchase takes place; based on all these factors a consumer would choose depending on the level of satisfaction or utility obtained from the product or service whether to re-purchase the product or not.

There are basically three cases of repeat buying situations that can be defined. First, if a consumer buys more than one product in one or more purchase occasions (transactions) in a given time period. In this case, consumers differ in how often they repeat buy the products. The frequency of buying would be 0 for a consumer that did not purchase the product and 1 for consumers that purchased the product once. For repeat buyers, the frequency will be 2, 3, 4, etc., depending on the number of repeat buying occasions they purchased the product. The second way of repeat buying refers to consumer that may buy the product in more than one time period, or multiple transactions in a given period. Then a model can be formulated for repeat buying behavior under stationary and no trend conditions. The third and last form of repeat buying behavior is that more than one unit may be purchased on the same purchase occasion (Ehrenberg, 1988).

Data and Methods

The conceptual framework for this study is based in the random utility theory. A random utility model assumes that the utility function for a consumer has two components, one that is deterministic, and one that is not observable and therefore treated as random variables (Carpio et al., 2008). The unobservable portion treated as random variables could be characteristics of the consumers or the products. Following Hanemann (1984), the utility obtained from consuming ornamental plants can be written as:

$$(1)\quad u(x, b, z, s, \varepsilon)$$

where x represents a vector of ornamental plant commodities, z is all other commodities, b represents ornamental plant features (attributes), s represents consumer socio-demographic characteristics, and ε is a random vector of unobservable consumer or ornamental plant characteristics. The consumer chooses (x,z) to maximize utility subject to a budget constraint:

(2) $\sum p_j x_j + z = y$

And the non-negativity constraints:

(3) $x_j \geq 0, z \geq 0$

The data were obtained through an electronic mail survey conducted in July of 2008 to a representative sample of the Texas population following Dillman's tailored design method (Dillman, 2007). The survey sample consisting of 880 individuals provided by MarketTools Corporation, a company specialized in market research and online survey services. From the total sample, approximately 31% were actual consumers of the ornamental industry's products, lowering the final number of usable responses to 274 observations.

The dependent variable is frequency of buying for ornamental plants. It is defined as the number of transactions per month ($f_i = 0,1,2,3,...,n$) and it is a function of the purpose of the purchase (PP), seasonality (S), price (P), ornamental plant features including low care demanding (LCD), organically grown (ORGANIC), light demanding (LD) Guaranteed growth (GG), drought tolerant (DT), vibrant colors (VC), and several demographic characteristics, including age, gender, marital status, income, ethnicity, education, and region. The purpose of the purchase is to use the ornamental plants for self consumption or gifts. The frequency of buying of flowers is affected by seasonal factors. As an example, the frequency of buying and the total number of buyers increase during special calendar occasions such as Mother's Day, Valentine's Day, Christmas, etc. Since our data are not time series, monthly seasonality cannot be evaluated. The variable seasonality is a discrete variable that identifies self described special occasion buyers only (non-habitual buyers), versus habitual ornamental buyers. There is also a random term ε that represents unobserved consumer or ornamental plant features. The dependent variable frequency of buying is censored and therefore the Tobit model is used for the estimation. The general frequency of buying econometric model can be written as:

(4)

$$\begin{aligned} f_i = {} & \beta_0 + \beta_1 LCD + \beta_2 ORGANIC + \beta_3 LD + \beta_4 GG + \\ & \beta_5 DT + \beta_6 COLOR + \beta_7 P + \beta_8 AGE2 + \beta_9 AGE3 + \\ & \beta_{10} AGE4 + \beta_{11} FEMALE + \beta_{12} MARRIED + \beta_{13} INC2 + \\ & \beta_{14} INC3 + \beta_{15} INC4 + \beta_{16} ET2 + \beta_{17} ET3 + \beta_{18} EDU2 + \\ & \beta_{19} EDU3 + \beta_{20} REG2 + \beta_{21} REG3 + \beta_{22} PP + \beta_{23} S + \varepsilon_i \end{aligned}$$

where all variables used in the model and their definition are presented in Table 1 (see Appendix).

Because the dependent variable in our regression model equation has a lower limit (i.e. zero), and the dependent variable takes the value of zero for a large number of sample observations (24.8%), conventional multiple regression analysis is not an appropriate technique to be used (Lung-Fei and Maddala, 1985). In order to account for this truncation on the data set the Tobit model can be specified as follows (Greene, 2000):

(5) $f_i^* = x_i'\beta + \varepsilon_i$,

where x_i' is the (1 × K) vector of explanatory variables and $\varepsilon_i \sim N(0, \sigma^2)$ and it is independent of other errors. Thus for any household the buying frequency model would take the form:

$$\begin{aligned} (6) \quad & f_i = f_i^* \ \text{if} \ f_i^* > 0 \\ & f_i = 0 \ \text{if} \ f_i^* \leq 0. \end{aligned}$$

From the total number of observations N in the sample, the number of observations can be divided into two groups; one for which $f_i = 0$, N_0; and another for the number of observations for which $f_i > 0$, N_1. In order to observe the statistical problems arising from the censored sample problem, consider leaving out of the analysis the N_0 observations for which $f_i = 0$. For the remaining N_1 sample observations, they are complete observations. Hence, one can use least squares estimators to estimate β. The problem is that this estimator is biased and inconsistent. In order to prove that, one can write down the expectation of the observed values of f_i conditional on the fact that $f_i > 0$:

$$(7) \quad E[f_i \mid f_i > 0] = x_i'\beta + E(\varepsilon_i \mid f_i > 0)$$

If the conditional expectation of the error term is zero, then the estimates of the least square regression on N_1 would provide an unbiased estimator for β. However this is not the case; if the ε_i are independent and normally distributed random variables, then the expectation would be:

$$(8) \quad E[\varepsilon_i \mid f_i > 0] = E[\varepsilon_i \mid \varepsilon_i > -x_i'\beta] > 0$$

It can be shown that this conditional expectation can also be expressed in the following manner:

$$(9) \quad E[\varepsilon_i \mid \varepsilon_i > -x_i'\beta] = \sigma \, {}^{\phi_i}\!/_{\Phi_i}$$

where ϕ_i and Φ_i are the standard normal probability distribution function (p.d.f), and cumulative distribution function (c.d.f.) evaluated at $(x_i'\beta / \sigma)$; therefore in the regression model, if $f_i > 0$, then,

$$(10) \quad \begin{aligned} f_i &= x_i'\beta + \varepsilon_i \\ &= x_i'\beta + \sigma \frac{\phi_i}{\Phi_i} + u_i \end{aligned}$$

if we apply the regular least squares procedures the term $\sigma \frac{\phi_i}{\Phi_i}$ is omitted. Since that term is not independent of x_i the results are biased and inconsistent.

The parameters were estimated with Time Series Processor (TSP) version 4.5 (Hall, 1992). The estimation procedure uses the analytic first and second derivatives to obtain maximum likelihood estimates via the Newton-Raphson algorithm. The starting values for the parameters are obtained from a regression on the observations with positive f values. The numerical implementation involves evaluating the normal density and cumulative normal distribution functions. The cumulative distribution function is computed from an asymptotic expansion, since it has no closed form. The ratio of the density to the distribution function, used in the derivatives, is also known as the Inverse Mills Ratio.

Results and Discussion

As shown in Table 2 (see Appendix), the survey sample was a fair representation of the Texas' population based on selected socio-demographic characteristics including marital status, gender, ethnicity, and income. About 60% of respondents were married compared with 54% of the population in Texas. The percentage of females in the sample was 53% versus 50% for Texas; and 53% of the total number of respondents had an income of more than $50,000 compared to 47% of Texas' population. The ethnical distribution of the sample was similar to the U.S. Census Bureau data, with Caucasians accounting for the majority of responses in the survey and comprising the majority of the true population, followed by Hispanics. The highest educational degree obtained from 78% of the sample population was a bachelor's degree compared with 92% of Texas' population.

Most respondents (78.5%) reported to be non-habitual ornamental buyers or purchasers of ornamental plants during special calendar buying occasions only. Most (84%) ornamental products in Texas were purchased for self-consumption purposes. The preferred outlets to purchase ornamental products were garden centers (72%), followed by nurseries (40%), chain stores (32%), and supermarkets (30%).

Respondents were also asked to rate, from 1-5, the importance of several aspects in the purchase decision including price (3.89), vibrant colors (3.85), low-care demand (3.83), drought tolerance (3.64), season (3.57), guaranteed growth (3.51), light demand or requirement (3.34), and organic (2.58). The weighted average rating of these aspects clearly suggests that price is the most important feature, followed very closely by vibrant colors and low-care demand (low maintenance). The rating of organically-grown and light requirement implies that these two features are typically not very important to Texas consumers when making purchasing decisions for ornamental plants. For instance, 45% of the respondents assigned low ratings of 1 or 2 to organically-grown products and 36% confirmed that light requirement was not a feature they carefully seek for when buying an ornamental plant.

The parameter estimates of the buying frequency model for ornamentals are presented in Table 3 (see Appendix). The strong significance of the sigma parameter suggests that for the data truncation, the lower limit level of zero can not be ignored and the estimation method must deal with the asymptotic distribution of the data. This parameter refers to the estimated standard deviation of the residual. In this model, 184 out of 249, or 73.9% of the usable observations were positive. The frequency of buying for the average respondent was 1.36 transactions per month. The sign of the parameters can be interpreted as an increase (positive), or decrease (negative) in the monthly frequency of buying measured in number of transactions per month. The marginal effects represent the change in the monthly frequency of buying for an additional unit of the variable. Since most of the variables in the model are dummy variables, then marginal effects are interpreted as the change in the number of transactions per month associated to that dummy variable. For example, low care demanding plants (LCD) would increase the monthly frequency of purchasing by 0.0256. On the contrary, if a plant is not low care demanding, then the monthly frequency of purchase would be reduced by 0.0256 transactions

The price coefficient is, as expected, negative, in accordance to economic theory (Nicholson, 1998). There was no statistical significant influence associated with younger age groups and frequency of buying. Age2 (25-39 years old), Age3 (40-55 years old) and Age4 (more than 55 years old) all decreased frequency of buying. For individuals of 25-39 years of age, frequency of buying was reduced by 0.03 transactions per month, while 40-55 years of age had 0.08 less transactions per month, and individuals older than 55 had 0.05 less transactions per month. Respondents with incomes between $25,000 and $49,999 had a higher frequency of buying, with 0.06 more transactions per month. No other income groups had statistically significant effects on frequency of buying. Higher income groups (Inc3 and Inc4) had negative marginal effects of about 0.02 less transactions per month. Ethnicity was not found to have statistically significant effects on buying frequency. Individuals with a college degree tend to make 0.08 less transactions per month. The two variables with the highest effects on frequency of purchasing were purpose of the purchase (PP) and seasonality (S), with both variables increasing the frequency of buying. When the purpose of the purchase was for self-use, the model showed an increase in the number of transaction per month of 0.09. The seasonality variable sought to differentiate between those individuals making most of their ornamental purchases during special calendar occasions, such as Valentine's Day, Mother's Day and Christmas, etc. and those individuals who also purchase ornamentals in non-calendar occasions (year-round). Respondents who purchase ornamentals year-rounded increase frequency of buying by 0.2165 transactions per month. No statistically significant differences in frequency of buying were found among Texas regions.

Summary and Conclusions

This paper used an electronic survey conducted in Texas to study the main factors affecting the frequency of purchase, measured in transactions per month, for ornamental plants. The frequency of buying for the average buyer was 1.36 transactions per month. Major factors affecting consumer frequency of purchase in transactions per month were grouped into ornamental plant features, socio-demographic characteristics (including regional differences), and consumer habits. While several differences in demographic characteristics of respondents and ornamental plant features were found, consumer habit factors impacted the frequency of ornamental plants buying the most, including the purpose of the purchase and seasonality. The marginal effects for each variable shown in Table 3 show the increase/decrease in the number of transactions per month if everything else is held constant. When the purpose of the purchase was to use ornamental plants for self-consumption the frequency of transactions per month increased 0.09

or 6.9%. Those respondents who were self-described as habitual buyers (bought products during non-special seasonal occasions) increased the number of transactions per month by 0.21 or 15.9%. In terms of ornamental plant features, light demanding plants and purchase price had a negative effect in frequency of purchase. Light demanding plants reduce consumer frequency of purchase 0.04 per month (3.0%). Drought tolerant plants had a positive effect in frequency of purchasing by increasing it 0.03 (2.8%). There were also socio-demographic factors that influenced consumer frequency of purchasing. Older age groups (Age3: 40-55 years, and Age4: 55 or older) and respondents with a college degree had a lower frequency of buying. Individuals with medium income levels ($25,000 to $49,999) increase frequency of buying by 0.06 transactions per month (4.5%). No statistically significant effects of ethnicity or regional differences in the state of Texas were found on frequency of buying.

While there may have been some product or consumer features not included in the specification of our econometric model, these results provide useful insights for ornamental plant growers in terms of the factors affecting frequency of purchase for ornamental plants. Frequency of purchase measured in number of transactions per month multiplied by expenditures per transaction yield total sales. Understanding which ornamental plant features affect the number of transactions during non-special seasonal occasions is vital information for growers. Socio-demographic characteristics of ornamental plant consumers and their effect in frequency of buying can be used to target specific groups for promotions.

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Appendix

Table 1. Description of Variables Included in the Ornamental Plant Buying Frequency Model.

Variable	Description
Ornamental plant features	
LCD	Low care demanding
ORGANIC	Organically grown
LD	Light demanding
GG	Guaranteed growth
DT	Drought tolerant
COLOR	Vibrant colors
P	Price
Socio-demographic characteristics	
AGE2	Age between 25-39 years old (= 1 if true and 0 otherwise)
AGE3	Age between 40-55 years old (= 1 if true and 0 otherwise)
AGE4	More than 55 years old (= 1 if true and 0 otherwise)
FEMALE	If gender is a female (= 1 if true and 0 otherwise)
MARRIED	Married marital status (= 1 if true and 0 otherwise)
INC2	Income level (= 1 if income between $25,000- $49,999 and 0 otherwise)
INC3	Income level (=1 if income between $50,000-$74,999 and 0 otherwise)
INC4	Income level (=1 if income is $75,000 or more, and 0 otherwise
ET2	Ethnicity (=1 if ethnicity is Hispanic, and 0 otherwise)
ET3	Ethnicity (=1 if ethnicity is other, and 0 otherwise)
EDU2	Education level (=1 if college degree, and 0 otherwise)
EDU3	Education level (=1 if graduate school, and 0 otherwise)
Consumer habits	
S	Seasonality (= 1 if habitual buyers – non special occasion only- and 0 otherwise)
PP	Purpose of the purchase (= 1 if self consumption and 0 otherwise)
Region	
DREG2	Region: Central Texas (= 1 if true and 0 otherwise)
DREG3	Region: South Texas (= 1 if true and 0 otherwise)
Dummy variables base levels	
AGE1	Age group of under 25 years
INC1	Income group of under $25,000
ET1	Ethnicity is Caucasian
EDU1	Education level is high school or less
REG1	Region is north

Table 2. Representativeness of the Survey Respondents Relative to the Texas Census Population Data.

Demographic variables		Survey Data Frequency	Survey Data Percentage	Census Data Percentage
Marital status	Married	163	59.9	53.5
	Single	109	40.1	46.5
Gender	Male	129	47.3	49.8
	Female	144	52.7	50.2
Education level	High School	32	11.8	48.4
	College	181	66.5	43.5
	Graduate School	59	21.7	8.1
Ethnicity	African American	10	3.7	11.5
	Caucasian	210	76.9	47.0
	American Indian	6	2.2	0.7
	Hispanic	29	10.6	36.0
	Asian/Pacific Islander	12	4.4	3.4
	Other	6	2.2	1.3
Age	Less than 25	35	12.9	38.7
	25-39	69	25.5	15.2
	40-55	81	29.9	28.4
	More than 55	86	31.7	17.6
Income	Under $25,000	45	16.4	26.7
	$25,000-$50,000	85	31.0	26.6
	$50,001-$75,000	57	20.8	17.9
	$75,001-$99,999	36	13.1	11.3
	$100,000-& above	51	18.6	17.5

Source: U.S. Census Bureau, 2000 and 2005-2007 American Community Survey

Table 3. Results from a Tobit Model Analyzing the Frequency of Buying Ornamental Plants.

	Tobit			
Variable	*Coefficient*	*Standard Error*	*t-value*	*Marginal Effects*
Intercept	0.5946	0.8983	0.6620	0.0904
Ornamental plant features				
LCD	0.1687	0.1568	1.0755	0.0256
ORGANIC	0.1781	0.1196	1.4890	0.0271
LD	-0.2686***	0.1580	-1.7004	-0.0408
GG	0.1709	0.1527	1.1189	0.0260
DT	0.2542***	0.1496	1.6995	0.0386
COLOR	-0.0660	0.1540	-0.4283	-0.0100
P	-0.2974**	0.1469	-2.0245	-0.0452
Socio-demographic characteristics				
AGE2	-0.1984	0.2309	-0.8592	-0.0301
AGE3	-0.5265**	0.2115	-2.4895	-0.0800
AGE4	-0.3173	0.2176	-1.4582	-0.0482
FEMALE	0.0800	0.2593	0.3084	0.0122
MARRIED	0.2223	0.2749	0.8086	0.0338
INC2	0.4008***	0.2088	1.9199	0.0609
INC3	-0.1176	0.2360	-0.4981	-0.0179
INC4	-0.1038	0.2325	-0.4467	-0.0158
ET2	-0.0734	0.3161	-0.2321	-0.0115
ET3	0.0782	0.2867	0.2729	0.0119
EDU2	-0.5342*	0.1837	-2.9076	-0.0812
EDU3	0.3178	0.2344	1.3560	0.0483
Consumer habits				
PP	0.6183***	0.3491	1.7709	0.0940
S	1.4246*	0.3164	4.5030	0.2165
Region				
REG2	-0.1542	0.1753	-0.8795	-0.0234
REG3	0.2994	0.2463	1.2157	0.0455
SIGMA	1.8173*	0.1002	18.1449	
Number of usable observations		**249**		

* P-value ≤ 0.1, ** P-value ≤ 0.05, *** P-value ≤ 0.01