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# Shopping outlet choice and frequency in urban areas of the Republic of Uganda

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## **Abstract**

This study examines the factors that decide where and how frequently members of urban households in the Republic of Uganda shop for food. Multivariate probit results reveal that income, education, employment status, household composition, and location influence shopping frequency in all five outlet types selected for this study. Study results provide rare insights about shopping format choice by consumers in lesser developed countries.

*Keywords:* Republic of Uganda, multivariate probit estimation, supermarkets, open-air markets, socioeconomic factors.

**JEL Classifications:** Q12, Q13

## **Introduction**

Economic growth in several developing countries over the past decades has changed the consumption habits in those societies. This in turn has influenced the transformation of shopping outlets. Street vendors and small retail shops, which constituted the major shopping outlets are being replaced by hypermarkets and supermarkets (Traill, 2006; Humphrey, 2007; Minten and Reardon, 2008). The republic of Uganda is no exception to this changing scenario, though the transformation is relatively slow. The per capita gross domestic product (GDP) has seen an increasing trend over the past decades and it was \$380 in 2006-07 (MFPED, 2008). Open-air markets and small retail stores still dominate the marketing infrastructure in the country, but, large, modern supermarkets are also being established in some urban areas, especially the capital city Kampala. Over the past decade, East Africa has seen a rise in supermarkets, with Uganda and Tanzania as recent additions (Weatherspoon and Reardon, 2003). The South African supermarket chain Shoprite has two centers and the Kenyan chain Uchumi has centers in Kampala, Mbale and Gulu. Both chains try to establish supermarkets in other cities as well (Bear and Goldman, 2005). Supermarkets are also present in other urban centers like Lira and Soroti. In addition to the above mentioned retail outlet types, garden outlets (sales places at farms) and street vendors also form a part of the retail food marketing structure in Uganda.

The knowledge about characteristics of consumers who patronize a particular type of shopping outlet will help those who run and manage that outlet in focusing on segments of consumers in order to improve sales. However, cross-shopping among consumers is a very common phenomenon everywhere in the world (Skallerud et al., 2009). According to Skallerud et al. (2009), there are several reasons for the cross-shopping behavior. These include lack of availability of all goods at one place, price and promotional campaigns, time constraints and

convenience of shoppers, and impulse buying behavior. Therefore, the same consumer will visit different outlets to buy different products, or the same products at different times.

Some previous studies have related the choice of a shopping outlet to socioeconomic and demographic characteristics of consumers (for example, Zeithaml, 1985; Stone, 1995; Arnold, 1997; Fox et al., 2004; Carpenter and Moore, 2006), apart from store attributes and consumer perceptions. Segmentation of consumers based on their socioeconomic and demographic characteristics helps retail managers to identify segments that are more likely to visit their retail outlets. The identification of such segments enables to target buyers in various consumer segments and make appropriate changes in the retail format to fit needs and expectations of consumers.

To the authors' knowledge, studies have not been undertaken to identify profiles of consumers who shop in certain types of outlets, in the Republic of Uganda. Since supermarkets are in the initial stage in this country, consumer profiles help all retail outlet type managers to modify their strategies to attract shoppers. When more and more supermarkets and hypermarkets enter into a market, the traditional retail outlets are considered in danger of extinction (Farhangmehr et al., 2001; Abrahams, 2010; Cheng and Yafeng, 2012). However, since consumers cross-shop, the knowledge about such consumers benefits even those retail outlets who find the entry of big supermarket chains a potential threat to their existence, by offering insights for improving services at those traditional outlets.

The objective of this study is to examine how socioeconomic and demographic characteristics influence shopping frequencies in various retail type outlets by a consumer in urban Uganda. The retail type outlets included are supermarkets, open-air markets, grocery stores, street vendors and garden sales outlets. This is done based on a household survey

conducted in five urban centers of Uganda in 2011. The results of this study help managers of various retail sub-sectors now operating in Uganda and of those planning to enter Uganda to develop suitable programs and strategies to improve their overall competitiveness.

### **Modeling approach**

The conceptual framework for this study follows the household shopping model proposed by Bawa and Ghosh (1999). According to this model, travel costs and inventory costs decide how frequently a household makes trips to shopping outlets. Households are assumed to be rational decision making units (Blattberg et al., 1978; Goldman and Johansson, 1978).

According to the economic quantity model (ECQ), the frequency of shopping is positively related to inventory costs and negatively associated with travel costs (Bawa and Ghosh, 1999).

The shopping frequency is directly related to the expenditures incurred and indirectly related to the consumption. The travel costs and inventory costs are determined by the socioeconomic and demographic characteristics of a household. Therefore, the frequency of shopping is determined by the socioeconomic and demographic characteristics.

Since cross-shopping is prevalent among consumers, socioeconomic and demographic characteristics have varied influence on shopping frequency in different types of outlets. This study examines the influence of shopper characteristics on various outlets such as supermarkets, open-air markets, grocery stores, street vendors, and garden sales outlets. The analysis includes five different equations, modeling the shopping frequency in each of the five outlet types. The occurrence of cross-shopping leads to the correlation among the errors of these five equations. Therefore, separate analyses of five equations may not give accurate results. In such instances a multivariate analysis is the most suitable method of estimation. Here, the response variables are binary variables, and multivariate probit method is used to estimate the five equations to

determine the factors that influence shopping frequencies in five retail outlet types in urban Uganda.

The multivariate probit regression method has been applied to data analysis in diverse fields (for example, Gibbons and Wilcox-Gök, 1998; Cheng and Wen, 2011; Samal et al., 2011; Baskaran et al., 2013). Suppose there are  $M$  equations to be estimated, each with 'n' number of observations (which can be different for each of these equations), then each of the equations can be written as:

$$Y_{mi}^* = \beta_m' X_m + \varepsilon_{mi},$$

where  $m = 1, 2, \dots, M$ , and  $i = 1, 2, \dots, n$ . Since  $Y_{mi}^*$  is a latent response variable, which cannot be observed, an observable binary response variable,  $Y_{mi}$  is created and takes the values:

$$Y_{mi} = 1 \text{ if } Y_{mi}^* > 0, \text{ or}$$

$$Y_{mi} = 0 \text{ otherwise.}$$

The error term of each of the  $M$  equations has a standard normal distribution with mean zero and variance of one. However, because of the presence of correlation across error terms, the  $M$  error terms have a multivariate normal distribution with mean zero and a variance-covariance matrix, say  $V$ . The matrix  $V$  has a value of one on the leading diagonal (variance of error terms) and covariances,  $\rho_{jk} = \rho_{kj}$  on off diagonals, where  $j \neq k$ , with  $j, k = 1, 2, \dots, M$ . The estimation is achieved through the simulated maximum likelihood method proposed by Cappellari and Jenkins (2003).

## Data

The study applies data collected from urban households in Uganda in the first half of 2011. Once the survey instrument was drafted, the data collection was outsourced to a market company selected through the bidding procedure. The chosen market company had experience in implementing household surveys in Uganda for international organizations. Following the market company selection, the company and the researchers who prepared the survey instrument held a workshop to train enumerators. The workshop was immediately followed by a pilot study conducted in a selected Kampala neighborhood in October 2010. The debriefing of enumerators did not reveal problems in understanding questions by respondents or respondents having difficulty providing answers. To implement the survey in towns other than Kampala, additional enumerators fluent in local dialects or languages were recruited and trained. The data are collected in Gulu, Lira, Soroti/Serere, Mbale, and Kampala. A total of 1,638 respondents were interviewed. About one half of them (844) were located in Kampala, and 200, 201, 193, and 200 in Gulu, Lira, Soroti/Serere, and Mbale, respectively. Respondents provided insights about their food shopping habits, choice of shopping outlets and frequency of patronizing each outlet type, and socio-demographic characteristics of the household.

Descriptive statistics of the variables selected for this study is given in Table 1. The first five variables listed in Table 1 are the dependent variables in each of the five equations. Majority of households shopped more than once a month at grocery stores (92%), followed by shopping in open-air markets (81%), and street vendors (59%). About forty percent of households shopped in supermarkets with a frequency of more than once a month, suggesting that this outlet type has relatively smaller group of patrons. It is evident from these figures that households in this study have done cross-shopping.

The average monthly household income is \$237 (calculated at the exchange rate in June 2011). For ease of understanding, the income has been converted into United States dollars (\$) at the exchange rate reported in June 2011 (Bank of Uganda, 2011), the month when the data collection ended. One dollar equaled 2,583 Uganda shillings (UGS). About 72 percent of respondents are females and nearly 70 percent are married (Table 1). Approximately 37 percent are self-employed, while a little over 13 percent have permanent employment contracts. About 35 percent of respondents have higher secondary education or above. Almost 72 percent of respondents are females, and the average age is about 35 years. The average household consists of 2.3 adults and three children. Almost 55 percent of households have children age three or younger, 67 percent have children between four and 12 years of age, and 48 percent have children between 13 and 18. Almost 52 percent of households are located in Kampala, while the remaining households are distributed almost evenly among the other four cities.

### **Estimation results**

The total number of observations utilized for estimation is 1,541 out of a total of 1,638 surveyed households. Some observations are omitted due to incomplete or missing responses. The estimated coefficients are interpreted based on the sign of estimates. If the sign is positive, the likelihood of shopping at a particular outlet type with a frequency of more than once a month will be more, in response to one unit increase in the case of a continuous explanatory variable, and with a change from zero to one in the case of a binary explanatory variable.

The results show that the model is globally significant based on the Wald Chi-square test, and the errors from individual equations are correlated based on the likelihood ratio test. The Wald Chi-square test value is 877.74 with a probability value ( $p > \text{chi-square}$ ) of 0.0000, while the likelihood ratio test chi-square value is 64.2767 with a probability value of 0.0000. Therefore, the

joint estimation of these five equations is justified. The estimated coefficients and robust standard errors are given in Table 2. The discussed results focus on individual economic, social, demographic, and location variables.

### *Household income and its sources*

An increase in the monthly household income increases the likelihood of making more than once a month shopping trips to supermarkets. Higher income enables households to do shopping more frequently at super markets, where there will be more diverse choice of products. The effect of income is the same with regard to the shopping frequency at open-air markets. Bawa and Ghosh (1999) find that higher income households shop more frequently. Another view is that high income households do not usually plan as much as low income households do, and therefore make frequent shopping visits as these are affordable to them (Zeithaml, 1985). High income households do not frequently purchase at street vendors. Street vendors have limited variety, and, are often located in places where there is heavy pedestrian traffic. Prices of products may be higher than at open-air markets, while quality may be compromised, especially as compared to supermarkets.

If the main source of income is salary in a particular household, then that household is more likely to shop at and super markets more than once a month. An assured source of income enables households to shop frequently at supermarket. Such households with salary as main source of income also shop frequently at grocery stores. If the main source of income is salary or trading, households are less likely to shop at garden sales outlets. Garden sales outlets will have only produce raised by the gardener, thereby decreasing the choice of products.

### *Education*

Households with respondents having an education of at least upper secondary level are more likely to shop frequently at supermarkets. Higher education increases the knowledge about healthy consumption, which requires diverse products with good quality. Such high quality products are usually available in supermarkets. Also educated shoppers may have higher demand for fresh food (Blaylock, 1989), leading to more trips to shopping centers. However, households with highly educated respondents shop less frequently at garden sales outlets.

### *Employment type*

Respondents with permanent employment shop more frequently in supermarkets, when compared to the reference category that includes unemployed persons along with students, retired persons, etc. This result shows that an assured income enables such households to shop frequently at places like supermarkets. Permanently employed respondents shop more frequently at open-air markets as well, compared to the reference category. Those households with respondents who are self-employed are more likely to shop more than once a month at supermarkets, and less likely to shop at garden sales outlets, compared to the reference category.

### *Gender, age and marital status of respondent*

If the respondent is a male, then the likelihood of shopping frequently at garden sales outlets is more compared to female respondents. Paswan et al. (2010) observed that men usually select smaller stores and women select large stores. Garden sales outlets tend to be small offering a limited variety of products. Zeithaml (1985) reports that males usually make more shopping visits than females, because males usually do not adequately plan ahead of a shopping trip as

females do. The current study does not confirm significant effect of gender with regard to shopping frequency at other outlet types.

An increase in respondent's age increases the frequency of shopping at garden sales outlets. This result is consistent with the result from a study by Gorton et al. (2011), where they found that older consumers regularly shop at wet markets, which are traditional markets that sell fresh produce and meat. Blaylock (1989) reports that the reason for more frequent shopping by older people might be the desire for fresh food. That might be one of the reasons why older respondents in this study are found to be shopping more frequently at garden sales outlets. The effect of respondent's age on supermarket shopping frequency is negative, meaning households with older respondents make less trips to supermarkets. A study by Meneely et al. (2009) concludes that elder customers in Northern Ireland feel that facilities in supermarkets are not fully suitable for them to make frequent visits. Gorton et al., (2011) also conclude that older persons tend to shop less frequently at supermarkets.

Households with married respondents make frequent visits to garden sales outlets. A possible explanation is that married respondents are more concerned about family members, and so they would like to ensure the freshness of the products they buy. The result coincides with findings reported by Zeithaml (1985) that concludes that married respondents plan shopping more effectively than single respondents.

#### *Household composition*

An increase in the number of adults increases the likelihood of frequent shopping in supermarkets. More adults in a household imply more diverse preferences and needs for a wider array of products than households with fewer adults.

Households with children of age 3 or less shop frequently at grocery stores and less frequently at garden sales outlets. Households with children between 4 and 12 years of age shop more frequently at street vendors. Children at this age can see the products in display at street vendors when the family walks by, whereas in other stores children can see those products only when other family members enter a store. Therefore, children's demands might increase the purchases from street vendors.

#### *Location*

Households located in regional urban centers shop less frequently in supermarkets and grocery stores as compared to households in Kampala. Being the capital and the most populous city, Kampala has a larger number of supermarkets than other towns. Therefore, accessibility affects the frequency of supermarket shopping, and naturally is higher in Kampala. Similarly the number of grocery stores is also higher in the capital city, because of the sheer size of the city. Households in other cities shop more frequently in garden sales outlets, compared to those from Kampala. A reason for this result may be the presence of more farms near these towns than near Kampala, leading to more accessibility to sales outlets operated by those farms. Households from Lira shop frequently in open-air markets, whereas households from Soroti and Mbale shop less frequently in these markets. Households from Gulu and Soroti shop less frequently at street vendors, compared to households from Kampala, likely due to the presence of more street vendors close to pedestrian traffic in the capital city.

#### *Correlation of shopping frequencies at different outlets*

Table 3 gives the estimated correlation coefficients among various retail outlet types. The shopping frequency at grocery stores is positively correlated with the frequency of shopping

from street vendors, meaning households that shop frequently at retail stores also shop frequently at street vendors. Similarly shopping at retail stores is positively correlated to shopping at garden sales outlets. Other significant positive correlations are those between garden sales outlets and street vendors, and between supermarkets and open-air markets.

There are two significant negative correlations. A stronger negative correlation is between open-air markets and street vendors. This correlation tells that when shopping frequency at open-air markets increases (decreases), shopping frequency at street vendors decreases (increases). When respondents do not get time to shop at open-air markets, they may resort to purchasing from street vendors whom they can find near their households. The other negative correlation, which is relatively a weaker one is between supermarkets and street vendors.

## **Discussion**

Higher income, education, more adults, and both permanent and self-employment status are found to increase the shopping frequency at super markets. These findings are consistent with some of the earlier studies (For example, Zeithaml, 1985; Blaylock, 1989; Bawa and Ghosh, 1999; Gorton et al., 2011). However, older respondents tend to decrease the shopping frequency at supermarkets. Gorton et al. (2011) also report a similar result. Meneely et al. (2009) find that in Northern Ireland older people are not fully satisfied with the facilities at supermarkets. Therefore, here there is scope for supermarket managers to increase sales by attracting more customers through improving services at their centers.

Higher income or permanent employment increases the shopping frequency in open-air market and grocery outlet types. In Lira city such outlets are visited more frequently. Salary as the main source of income and presence of children of three years of age or less are the only

factors that significantly affect shopping frequency at grocery stores and these factors increase the frequency. Both types of outlets are less frequently visited by households from Soroti and Mbale.

Permanent and self-employment status, and higher education negatively affect shopping frequency, while males, older respondents, or married respondents tend to increase this frequency of shopping at garden sales outlets. Households from Gulu, Lira, Soroti, and Mbale shop more frequently at these outlets, compared to households from Kampala.

With regard to street vendors, higher income or household location in Gulu or Soroti are negatively related to the shopping frequency. However, presence of children of age between four and twelve is positively related to shopping frequency in these places.

Results show that location is an important factor in determining the shopping frequency at all outlets covered under the study. Households from Gulu, Lira, Soroti, and Mbale shop less frequently in supermarkets and grocery stores than households from Kampala. However, such households shop more frequently at garden sales outlets. Therefore, there exists a potential for supermarket chains for opening in these cities, along with their entry into the capital city.

Knowledge about food shopping behavior, especially in urban areas, is essential for the formulation of policies and implementation plans with regard to city planning and monitoring access to assure food security of urban residents. The study results provide rare insights about shopping format choice by consumers in lesser developed countries. Such information is essential for retail managers as well, in order to analyze the strengths and weaknesses of their store services. Such analyses help them improve their store services to attract more customers and increase profits.

The results from this study help profiling households that shop more/less frequently at various outlets covered under the study. Such socioeconomic and demographic profiling of households/consumers from the urban areas of in the Republic of Uganda are rare in the literature.

Table 1. Sample descriptive statistics .

Variable	Mean	Std. Dev.	Min.	Max.	Description
Grocery store <sup>@</sup>	0.9245	0.2643	0	1	Shopping at grocery stores
Open market <sup>@</sup>	0.8151	0.3883	0	1	Shopping at open-air markets
vendor <sup>@</sup>	0.5905	0.4919	0	1	Shopping at street vendors
Supermarket <sup>@</sup>	0.4031	0.4907	0	1	Shopping at super markets
Garden <sup>@</sup>	0.2316	0.4219	0	1	Shopping from garden sales outlets
Income	237.01	771.76	0.39	25938.83	Total monthly household income in \$
Soutrading	0.3013	0.4589	0	1	Main source of income is trading
Sousalary	0.3038	0.4600	0	1	Main source of income is salary
Education	0.3451	0.4755	0	1	1= upper secondary or higher
Permanent	0.1343	0.3410	0	1	1 = permanent job
Selfemploy	0.3718	0.4834	0	1	1 = self-employed
Others	0.4915	0.5001	0	1	1 = other types of jobs *
Respgend	0.2784	0.4483	0	1	1= male; 0 = female
Age	35.34	12.36	17	89	Age of the respondent in years
Married	0.6923	0.4617	0	1	1= married
Adults	2.29	1.41	0	15	Number of adults in the household
Child3dum	0.5488	0.4978	0	1	1= if a household has children of 3 years old or younger
Child12dum	0.6722	0.4696	0	1	1= if a household has children of age between 4 and 12 years old
Child18dum	0.4822	0.4998	0	1	1= if a household has children of age between 13 and 18 years old
Gulu	0.1215	0.3268	0	1	Residence in Gulu (=1)
Lira	0.1221	0.3275	0	1	Residence in Lira (=1)

Mbale	0.1215	0.3268	0	1	Residence in Mbale (=1)
Soroti	0.1173	0.3218	0	1	Residence in Soroti (=1)
Kampala	0.5153	0.4999	0	1	Residence in Kampala (=1)*

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\* Reference category; @ 0 = Shopping frequency is  $\leq$  once a month, 1 = Shopping frequency is > once a month

Note: \$1 = 2,583 UGS, June, 2011.

Table 2. Estimation results from multivariate probit regression

Factor	Supermarket	Open market	Garden	Vendor	Grocery store
Income	0.000000240*** (5.01e-08)	0.000000137* (7.10e-08)	3.76e-08 (3.37e-08)	-7.84e-08** (3.75e-08)	2.78e-09 (2.07e-08)
Soutrading	-0.0242 (0.0890)	0.0630 (0.0988)	-0.2302** (0.1040)	0.0988 (0.0865)	0.0423 (0.1350)
Sousalary	0.3172*** (0.0951)	0.0156 (0.1081)	-0.2652** (0.1142)	0.0457 (0.0928)	0.327** (0.1601)
Education	0.5161*** (0.0807)	0.1468 (0.0943)	-0.3121*** (0.0997)	-0.1129 (0.0795)	0.0910 (0.1311)
Permanent	0.4502*** (0.1211)	0.3241** (0.1451)	-0.2402* (0.1462)	-0.0730 (0.1172)	-0.0209 (0.1980)
Selfemploy	0.1268* (0.0791)	-0.0405 (0.0874)	-0.1558* (0.0924)	-0.1071 (0.0770)	0.1819 (0.1267)
Respgend	0.0202 (0.0858)	-0.1152 (0.0929)	0.1193* (0.0917)	-0.0261 (0.0795)	-0.1357 (0.1156)
Age	-0.0064* (0.0033)	-0.0032 (0.0034)	0.0105*** (0.0034)	-0.0047 (0.0031)	0.00445 (0.0048)
Married	0.0216 (0.0799)	0.0076 (0.0879)	0.1431* (0.0947)	0.0712 (0.0765)	0.0056 (0.1227)
Adults	0.0628** (0.0268)	-0.0350 (0.0274)	0.0076 (0.0279)	0.0185 (0.0249)	-0.0361 (0.0362)
Child3dum	-0.0234 (0.0737)	-0.0745 (0.0809)	-0.1522* (0.0840)	-0.0233 (0.0705)	0.2352** (0.1112)
Child12dum	-0.0594 (0.0760)	0.1088 (0.0843)	-0.1122 (0.0900)	0.1424* (0.0736)	0.1422 (0.1186)
Child18dum	0.0142 (0.0754)	0.0346 (0.0830)	0.1073 (0.0858)	0.1012 (0.0720)	0.1124 (0.1138)
Gulu	-1.1601*** (0.1432)	0.2346 (0.1365)	1.2542*** (0.1251)	-1.0641*** (0.1146)	-1.1468*** (0.1557)
Lira	-0.6051*** (0.1182)	0.5202*** (0.1546)	1.1343*** (0.1257)	0.0125 (0.1121)	-1.1563*** (0.1551)
Soroti	-0.3513*** (0.1179)	-0.3648*** (0.1237)	1.1824*** (0.1281)	-0.5468*** (0.1111)	-0.5613*** (0.1842)
Mbale	-0.1983* (0.1157)	-0.5464*** (0.1176)	1.3532*** (0.1238)	-0.1689 (0.1087)	-0.4523** (0.1901)
_cons	-0.4234*** (0.1568)	0.9565*** (0.1705)	-1.6103*** (0.1831)	0.4892*** (0.1507)	1.5243*** (0.2301)

Note: Standard errors in parentheses. \*, \*\*, and \*\*\* represent significance at 10%, 5%, and 1%, respectively.

Table 3. Estimates of correlation coefficients among shopping frequencies at different outlets.

Outlet type	Supermarket	Open-air	Garden	Vendor	Grocery store
Supermarket	-	0.2064*** (0.0476)	-0.0824 (0.0524)	-0.0875** (0.0434)	0.0532 (0.0640)
Open-air	-	-	-0.0554 (0.0568)	-0.1442*** (0.0479)	-0.0260 (0.0675)
Garden	-	-	-	0.1212** (0.0484)	0.1679*** (0.0633)
Vendor	-	-	-	-	0.2418*** (0.0568)
Grocery store	-	-	-	-	-

Note: Standard errors in parentheses. \*, \*\*, and \*\*\* represent significance at 10%, 5%, and 1%, respectively.

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