Targeting Consumers by Store – The Basis of Increased Sales with Less Advertising

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ABSTRACT

Conditional Logit approach was used to analyze the Choice Experiment data obtained from the grocery stores and supermarket of Tbilisi, Georgia. Results show that customers' preferences for selected pork attributes in different stores are not the same. So, targeting customers by store can be beneficial marketing tool for pork suppliers.

Keywords: Willingness-to-Pay, Choice Experiment, Pork Attributes
JEL Codes: D120, D190, M390, Q130, Q180

INTRODUCTION

One of the main challenges for the members of the food supply chain is to target the appropriate market segment when promoting the product. Promotion, as well as any type of marketing action, is always related to certain expenses. The marketing expenses will be considerably reduced, or sales per marketing expenses ratio will be increased, if the marketing mix is delivered to the right customers. Consequently, basing consumer segmentation on shopping behavior is one possible approach to increased market share and potentially larger marketing margins.

This paper considers the case of transitional Republic of Georgia, where supply chains as well as marketing tools of the food product suppliers are just being developed. The primary supply channel for meat products, including pork, in the Republic of Georgia has historically been via open markets. Such markets are typical throughout the world in less developed countries where the marketing systems have not evolved to take advantage of scale economies and technologies that extend the shelf life of perishable products. Taking into account the way food products are provided to the customers at those outlets, products are valued primarily according to their physical appearance and lack other (informational, safety, etc.) attributes that one might typically find in a more highly developed marketing system.

In recent years, however, meat products in Georgia have begun to appear at supermarkets and food store chains. At those places, meat is more conveniently processed and the overall food safety and product presentation environments are more appealing and controlled. Prices of meat products at these stores are approximately 15-20 percent higher. However, if that outcome (retailing meat through supermarkets) is assumed to be market-driven, then it is interesting

evidence of the emergence of a group of customers who are willing to pay a premium for specific product attributes.

Newly emerged supermarkets and upscale grocery stores considerably differ from each other. That is true with regard to store location as well as overall environment in the stores, service level, etc. Those differences might be good reason for certain consumer segments to prefer one type of store to another, depending on their income, shopping experience, expectations, etc.

The objective of this study is to estimate and compare consumers' preferences and their willingness-to-pay for selected pork attributes in two different types of retail outlets in the Republic of Georgia.

The hypothesis of the study is that consumers' willingness-to-pay for selected pork attributes differ from each other depending to which store they visit.

This study uses a choice experiment approach to elicit consumer preferences concerning selected pork attributes. The experiment tested consumers' preferences for pork *color*, *state quality assurance*, *information about the producer* and *convenience of store location*. A survey of random consumers was conducted at two convenient type grocery stores (below referred to as *grocery store*) and an upscale supermarket (below referred as *supermarket*). Grocery stores are defined as average size stores located on the ground floor of a several-story apartment building, where only grocery products are provided. Supermarket is defined as a "Wal-Mart type" large store, located outside of the downtown residential area, where, along with food products, apparel, housekeeping supplies and other consumer products are also sold.

Together with the choice experiment responses some socio-demographic information was also collected. In total 159 observations were collected, out of which 101 observations were from the supermarket and 58 from the grocery stores.

LITERATURE REVIEW

The literature on consumer demand contains a large number of studies conducted over the past several decades that explore consumer attitudes and perceptions about food products and food product attributes.

It is undisputable that consumer demand for specific product attributes and reliable product quality and safety is growing (Unnevehr, Miller and Gomez, 1999). This process is more apparent in high-income countries (societies). However, this trend is also becoming noticeable in developing countries as more information about quality and food safety becomes available (as a result of scientific development, technology transfer, and infrastructure enhancement) and incomes rise.

A large bulk of related studies have been conducted in the US and Western European countries, however there are quite a few of them done in former social block or Eastern European countries as well. For example, a study of household food demand in transitional Bulgaria (Goodwin and Phaneuf, 2001) revealed that food demands there are similar to what is observed in many other non-transitional market economies. The same study concluded that if real incomes grow as expected, the consumption of meats and processed food products will

expand. Another study in Macedonia (Grannis, Hine and Thilmany, 1999) showed that consumers are generally willing to pay premiums for quality attributes of cheese.

Most of the recent studies of food product demand concentrate on specific product attributes. Quality and safety issues appear to be popular topics of food demand research. These issues are nicely summarized in Grunert's recent paper (Grunert, 2005), where he considers the problem from both the supply and demand side. He highlights that adding value is a customer-oriented concept, which can result in reorganizing the agricultural and food production (and other levels) supply chain to meet the customer's preferences for safety and quality standards.

A study by Enneking also intended to measure the impact of safety improvements on consumers' willingness to pay for packaged liver sausages (Enneking, 2004). The result of the research revealed that consumers are willing to pay premiums for safety labels attached to the product. The research also concludes that marketers indicating food safety by means of a Q&S label are able to charge a price premium of up to 20 percent in a situation where most of the other suppliers forego this type of signaling.

According to Unnevehr, Miller and Gomez (1999), quality and safety assurances may be prerequisites for market access, or they may capture a price premium in a niche market. The research also highlights the growing demand for microbial food safety and concludes public agencies potentially having an important role in third-party certification to overcome market failures.

The paper by Lusk et al 2001, analyzes the reasons for a decline in U.S. beef demand over the last several decades. A number of previous authors cite such attributes as consumer health concerns, food safety concerns, product convenience and offering, product quality and consistency, changing demographics, and evolving consumer preferences. The same paper

studies and reveals consumers' willingness-to-pay a premium price for the information about the steak tenderness.

Piggott and Marsh (2004) assess growing food safety concerns of consumers in recent decades. Their investigation of whether publicized food safety concerns surrounding beef, pork, and poultry have impacted meat consumption revealed own- and cross-commodity effects to be statistically significant, however, economically small.

METHODOLOGY

The basic idea of this research relies on the assumption that every individual (decision maker) has the goal of achieving maximum utility subject to his or her resource allocations or budget constraint. The random utility model (RUM) represents one of the tools for analyzing consumer preferences based on objective and/or subjective factors taken into account as well as assuming some degree of heterogeneity among individuals.

To develop the main idea of the RUM, we need to introduce the notation in terms of a decision maker n facing choice among J alternatives. The decision maker will attain a certain level of utility from each alternative. Each derived utility can be denoted as U_{nj}. The assumed rational decision maker will choose the utility maximizing alternative. So, alternative i will be chosen over alternative j by consumer n if and only if

(1) $$U_{ni} > U_{nj} \forall j \neq i$$

The abovementioned utility (U_{ni}), for research purposes, can be additively decomposed into the systematic component of the utility associated with j^{th} alternative for n^{th} individual (V_{nj})

and a stochastic component (ε_{nj}) which captures the non-systematic (or idiosyncratic) factors that affect utility but are not included in V_{jn}.

(2) $$U_{nj} = V_{nj} + \varepsilon_{nj}$$

After certain algebraic manipulations (see Greene, 2003, Train, 2003 and Louviere et al, 2000 for details) we will end up with basic probability equation:

(3) $$P_{nj} = \frac{e^{\sum_{a=1}^{A} \beta_{nja} x_{nja}}}{\sum_{i=1}^{J} e^{\sum_{a=1}^{A} \beta_{nia} x_{nia}}}$$

Where *a* denotes the attribute.

Data for the research was collected from the grocery stores and supermarket through in-person interviewing randomly selected customers. Choice Experiment approach was implemented to obtain the information about consumers' preferences. Choice experiments have several advantages over the other methods. According to the Lusk and Hudson (2004) these advantages are that the approach:

1. is based on random utility theory and is consistent with Lancaster's theory of utility maximization;
2. closely mimics the consumer's typical shopping experience;
3. allows the researcher to investigate the trade-offs between the attributes, which is not easily done with traditional contingent valuation techniques; and
4. can be readily used to estimate the cross-price elasticities between novel and existing products.

Each choice set consisted of five two-level attributes, including price as an attribute. The interpretation of the attributes is as following:

- Price – the price is expressed in GEL per kg of pork;
- Color – the color of the meat is appealing, associates with "fresh" perception of meat;
- Producer of Origin – the product carries the label containing name of the farm, and its location;
- State Quality Assurance – the product carries the label issued by the state body (e.g. Ministry of Agriculture and Food of the Republic of Georgia) assuring that product (production process) was inspected for safety standards;
- Convenient Location – The location of the store is such that no extra trip is required to get there – either close to home, or on the way from the job place to home, etc.

Given the number of alternatives, attributes and attribute levels, in the case of full-factorial design we would end up with 1024 different combinations [(25)2)]. However, using the Optex procedure in SAS, we end up with 12 choice sets. The minimum possible amount of choice sets, or a total amount of degrees of freedom, was 11, derived from

$df = [(L-1)\times A\times M+1]$,

where L is the number of levels of the attribute, A is number of attributes, and M is number of alternatives in the choice set (without the additional "would not purchase" alternative).

Now, based on the above-mentioned discussion the general equation for the systematic component of the utility can be represented as:

(4) $$V = \alpha + \beta_1 P + \beta_2 C + \beta_3 R + \beta_4 Q + \beta_5 L$$

In this equation, P stands for price, C for color, R for producer, Q for quality and L for location. The coefficients β_1 through β_5 are the estimated coefficients for each attribute, α is the

product specific constant. Ideally, α would be equal to zero, if we included all the attributes of pork in the model. However, that is impossible, because

- Not every attribute can be observed.
- Some individuals (assuming heterogeneity) might have certain attributes associated to the product, whereas others not.
- Consumers would be unlikely to complete a survey that exhaustive and if they did, there would be insufficient degrees of freedom for regression analysis.

In our case the likely attributes that product-specific constant absorbs will be nutritional value of pork, fat percentage, tenderness, etc.

The probability of choosing alternative j among J alternatives presented in the store k will be estimated according to the following equation:

$$\text{(5)} \qquad \Pr(choice = j \mid k) = \frac{e^{\alpha_k + \beta_{k1}P + \beta_{k2}C + \beta_{k3}R + \beta_{k4}Q + \beta_{k5}L}}{\sum_{i=1}^{J} e^{\alpha_k + \beta_{k1}P + \beta_{k2}C + \beta_{k3}R + \beta_{k4}Q + \beta_{k5}L}}$$

Once we have estimated the coefficients of the attributes, the willingness-to-pay for each attribute will be derived based on the following equation:[1]

$$\text{(6)} \qquad WTP_a = -\frac{\beta_a}{\beta_p}$$

[1] The equation 4.3 is derived in following way:
Let x_1 be an attribute on which we are going to estimate the WTP. We can have two equations of systematic utility – first with $x_1 = 0$ and second with $x_1 = 1$:
$V_0(x_1 = 0) = \alpha + \beta_1*0 + \beta_2*x_2 + \ldots + \beta_n*x_n + \beta_p*P_0$
$V_1(x_1 = 1) = \alpha + \beta_1*1 + \beta_2*x_2 + \ldots + \beta_n*x_n + \beta_p*P_1$
Now, if we set systematic utilities equal to each other, we can solve the right-hand side equations for price, from which we will get:
$P_1-P_0 = - \beta_1/\beta_p$
And P_1-P_0 is the WTP for x_1 attribute in this case.

RESULTS

Enumerators conducted the survey at three grocery stores of Tbilisi, Georgia. Two of them where the convenience type stores (relatively small size but still an upscale type of store located conveniently in the densely populated district of the city) of the same store chain, and one was a "Wal-Mart type" supermarket. The subjects were interviewed in-person, and 159 total observations were obtained.

The descriptive statistical analysis of the obtained data show that on average customers at supermarkets consume approximately one pound more pork per week than grocery store consumers, and the average monthly household income of supermarket consumers is approximately 30% greater than that of grocery store consumers. In addition, 95 percent of the randomly interviewed supermarket consumers regularly purchase pork at that store as opposed to grocery store consumers where only 51 percent do actually purchase pork at that store.

Table1 presents some other descriptive statistics of socio-demographic variables. As we can see from the table the customers of different stores can be considerably differ from each other based on socio-demographic variables. The supermarket customers are larger households than grocery store customers (e.g. more than 40% of supermarket customers' households consist of 5 members or more, when for grocery store customers that number is just above 15%). Also there is higher likelihood of more children in among supermarket consumers' households than among grocery store consumer'. Supermarket customers consume larger amount of pork than grocery store consumers. All the abovementioned can be the result of another variable – income. More than half of surveyed supermarket customers' monthly household income is above 800 GEL, when slightly more than 30% of the grocery store customers are in the same category.

All the abovementioned surely could have its affect on consumers' preferences at different stores. The maximum likelihood estimation results for these two groups of customers reveal those dissimilarities of the preferences. The WTP values[2] were derived from the attribute estimators, which are provided in the table 2.

The results of the regression show that supermarket consumers have higher willingness-to-pay for the color attribute of pork ($1.70 per pound) than grocery store consumers ($1.30 per pound); also higher is supermarket consumers' WTP for store location convenience ($1.10 per pound) versus that of the grocery store consumers ($0.40 per pound). The consumers' WTP for state quality assurance is higher for grocery store consumers ($0.75 per pound) than for supermarket consumers ($0.44 per pound). This fact possibly requires additional explanation: most likely reason of consumers lower WTP for state quality assurance label at supermarket could be that supermarkets do a better job of managing quality/safety and so the demand for it is not as great in their stores because the label brings no increased sense of security over what is already assumed about the product whereas in the grocery store there is some doubt in the mind of the consumers and so the label carries some greater value. Consumers' WTP for the information about the producer is low and relatively comparable ($0.27 and $0.20 per pound for supermarket and grocery store consumers consequently). Assuming the linear additivity of consumer preferences, given all the selected attributes are present, consumers of the supermarket are willing to pay approximately $0.80 more per pound of pork purchased.

[2] For convenience values are converted into USD/lb terms.

CONCLUSIONS

Based on the above mentioned information the supermarket should be preferred to the grocery store by producers looking to capitalize on higher valued markets. As our example shows, the opportunities of the producer are increased due to serving the larger market share (of total store customers) and higher income consumers. From a marketing point of view, it should be mentioned that, in this case, three out of four dimensions of the marketing mix (product, price and promotion) are conditional on fourth dimension (place). Assuming the store loyalty of the customers, the advertising expenses of the producer can be reduced, though, the expenses on R&D will increase. This will result in increased producer surplus (at least in the short run); consumer surplus will also increase (or at least will not decrease) because higher quality product (which they value more) will be supplied to the market.

At the same time, however, the scale of production and retailing should be taken into the account – the market for the product must be large enough to justify producer investment and to create increased profit or total market share.

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Table 1. Descriptive Statistics of Observed Sample Population in Two Types of Stores

	Total	Grocery	Supermarket
Sample Size (persons)	159	58	101
Gender (percent)			
Male	35.8	22.4	43.6
Female	64.2	77.6	56.4
Age (mean)	43.1	44.4	42.3
Household Size (percent)			
1 member	2.5	3.4	2.0
2 members	10.1	13.8	7.9
3 members	20.8	32.8	13.9
4 members	31.4	32.8	30.7
5 members	19.5	6.9	26.7
6 and more members	15.7	10.3	18.8
Number of Children Under 18 (percent)			
0	37.7	43.1	34.7
1	27.7	31.0	25.7
2	29.6	24.1	32.7
3 or more	5.0	1.7	6.9
Household Pork Consumption (percent)			
< 0.5 kg/week	19.5	27.6	14.9
0.5-1.0 kg/week	15.7	22.4	11.9
1.0-1.5 kg/week	18.9	24.1	15.8
1.5-2.0 kg/week	16.3	12.1	18.8
> 2.0 kg/week	29.6	13.8	38.6
Household Income (percent)			
< 200 GEL/month	7.5	10.3	5.9
200-400 GEL/month	20.1	27.6	15.9
400-600 GEL/month	18.9	20.7	17.8
600-800 GEL/month	7.5	8.6	6.9
800-1000 GEL/month	17.1	13.8	18.8
> 1000 GEL/month	28.9	19.0	34.7

Source: Survey Data

Table 2. Estimated WTP Values for Supermarket and Grocery Store Customers

	WTP of Supermarket Customers (USD/lb)	WTP of Grocery Store Customers (USD/lb)	Difference Between WTP of Supermarket and Grocery Store Customers (USD/lb)
Color	1.69	1.29	0.40
Information About the Producer	0.27	0.20	0.06
State Quality Assurance	0.44	0.75	(0.31)
Convenient Store Location	1.07	0.42	0.65
Total	3.47	2.66	0.80