The Poor Pay More? Now They Don't Even Have a Store to Choose From: Bringing a Supermarket Back to the City

This paper begins with a background discussion about why inner city residents continue to have limited access to supermarkets. It moves on to a discussion of an empirical analysis of the impact of demographic factors, shopping preferences, and shopping behavior on the probability that a consumer will shop at a downtown supermarket, based on work completed for a city that is concerned about the sustainability of downtown city areas.

Jane Kolodinsky, University of Vermont[1]
Michele Cranwell, University of Vermont[2]

Introduction

The concept that the "poor pay more" hit the consumer affairs literature by storm in 1967 with the book by Caplovitz, *The Poor Pay More*. There is no lack of evidence that the poor in inner-city areas pay more when it comes to food shopping. They often lack access to a convenient grocery store, as large chain supermarkets are disproportionately located outside of inner city areas (Chung & Myers, 1999; Cotterill & Franklin, 1995; Gotlieb & Fisher, 1996). Further, low income persons do not have the same choice of quality, price, and selection as found in suburban supermarkets, as they shop at higher-priced, independently owned convenient or "Mom and Pop" stores that are located in the inner city (MacDonald & Nelson, 1991). Reduced purchasing power does not allow for the nutritional needs of the poor to be adequately met without extra costs (Ashman et al., 1993). On the other hand, there are legitimate reasons why supermarkets have left inner city areas, including costs of store development, shifts in population and transportation patterns, and the pressures from the market to increase profits and cash flow (Gotlieb & Fisher, 1996; Nayga & Riethmuller, 1995; Senauer, Asp, & Kinsey, 1991).

This study estimates the demand for an inner-city (downtown) supermarket in the context of whether such a supermarket can meet both the needs of residents and meet the goals of business. Specifically, it estimates the impact of consumer characteristics and preferences, and store characteristics on the probability of shopping at a supermarket in a downtown location.

Literature Review

Reduced Purchasing Power of the Poor in Urban Areas

Urban areas of low economic standing, throughout the United States are disproportionately under-served by the supermarket industry. Research by Chung and Myers (1999) shows that 89 percent of all chain grocery stores within the Minneapolis and St. Paul metropolitan areas were located in zip code areas that have less than 10 percent poverty rates. Similarly, Cotterill and Franklin (1995) documented that low income areas in nineteen cities in the United States had 30% fewer stores per capita compared to higher income areas.

Lack of access to a convenient grocery store is exacerbated by low vehicle ownership and lack of a supermarket within walking distance in urban areas. Transportation needs add to the cost of grocery shopping for lower income residents who are often dependent on mass transit for food shopping (Gotlieb & Fisher, 1996). This decreases the quantity of income available for purchases of quality food items, which is compounded by high prices of products, a characteristic of inner city food stores (Ashman et al., 1993; Chung & Myers, 1999; MacDonald & Nelson, 1991). Reduced purchasing power of residents in low-income urban areas decreases their ability to purchase price elastic products such as fruits and vegetables, which has many health and nutritional implications (Ashman et al., 1993).

Trends in the Supermarket Industry

The trend of supermarket flight from the inner city has been documented in many cities throughout the United States since the 1970s (Becker, 1992; Marion, 1982). Several factors are cited in the literature as reasons for supermarket divestment in the inner city and relocation to the suburbs (Ashman et al., 1993; Gotlieb & Fisher, 1996;

Nayga & Riethmuller, 1995). These include: *economic* (median income, population size and density, shifts in population and transportation patterns), *spatial* (availability of large parcels and neighborhood characteristics), *industry related* (cost of store development and maintenance, fewer chains, multi-service operations with higher sales per store, pressures of the market to increase profits and cash flow), and *social* (crime, perceived and actual racism). These location and industry related criteria have led developers to perceive urban, inner city areas as being deficient in profit generating, as inner city markets typically experience lower sales and profits because of lower amounts of disposable income available of low income residents and large elderly populations, characteristic of these areas (Marion, 1982).

Consumer preferences in relation to grocery shopping

There is evidence in several consumer preferences polls that suggest consumers choose to shop at a grocery store for several store attributes, regardless of income. According to FMI (1990), price, taste, and variety are important to all consumers, irrespective of income status. In addition, quality (specifically fruits and vegetables), nutrition, safety, and convenient location are also dominant themes expressed in their recent consumer poll. Data from the Progressive Grocer's 66th Annual Report (1999) show that store cleanliness, location, quality, and selection are important to all shoppers and reasons they choose to shop at a grocery store. The Progressive Grocer (1999) demonstrates that grocery stores can maintain a high profit margin by offering a combination of products with both high (i.e., convenience, take-out, deli, fresh produce) and lower profit margins (i.e., staples, non-food items), which serve the needs of all community members.

This study estimates a model to predict the probability that a downtown supermarket will be frequented by a variety of consumers. By determining the characteristics of both the population and the supermarket that impact consumer shopping probability, a supermarket can be designed to both meet consumer needs, while generating the profit necessary to continue operation.

Study Background and Methodology

While the above discussion highlights the problem of inner city residents in their quest to meet their basic food needs, the impetus for empirical part of this study comes from an actual case in which a downtown supermarket closed in a small city (population approximately 50,000), in June 1999. The city's Community Economic Development Office (CEDO) was interested in finding a viable alternative for an inner-city supermarket that could be profitable and meet the needs of BOTH the community and the store. They commissioned a scientific consumer study, conducted by the authors. This study concentrates on the demand side of the market.

Conceptual Model

Lancaster's (1966) goods characteristics model is an appropriate model to use for this study. If a supermarket is considered to be a good, then the characteristics of the supermarket, not the supermarket itself, are what satisfy consumer wants and needs. New products (a new supermarket) are difficult to analyze with a traditional model of demand, because the new product has not previously entered a consumer's utility function (Senauer, Asp, & Kinsey, 1991). While a new supermarket contains a bundle of "new" attributes, previous research provided information on basic attributes associated with supermarket demand. Thus, consumers are able to express their preferences about these attributes. By identifying the attributes of a supermarket that increase a consumers probability of shopping at a downtown supermarket, the developer of a new supermarket can structure the services offered in such a way to obtain the highest demand by consumers, increasing the likelihood of profit and ability to stay in business.

Data

Data for this study includes a representative sample of the city. A total of 398 interviews were completed by telephone interview. An additional 40 street intercept surveys were conducted with low-income individuals who had no phone in their homes. The sample has a statistical confidence interval of 95 percent, with a +/- 5 percent margin of error. The population AND sampling frame for the study were the 43,000+ residents with telephones and those without telephones. Calls were made until the appropriate number was reached to meet our 95/5 criteria.

The survey included a battery of questions relating to current grocery shopping behavior and expenditures, shopping behavior related to the now-closed downtown store, shopping preferences, intentions to shop at a downtown location, and a host of demographic questions, including items related to transportation.

A total of 423 respondents were included in a multivariate logit analysis. Based on Lancaster's (1966) bundles of characteristics model, we estimate the probability of shopping at a downtown supermarket as a function of characteristics of a grocery store that are known to be important to consumers (representative of preferences), controlling for demographic characteristics of the consumer. The dependent variable is PROBSHOP, a limited dependent variable that takes on a value of 1 if a respondent agreed with the statement "I would do my major grocery shopping at a downtown grocery store."

The independent variables are grouped into three categories: demographics, preferences, and shopping. *Demographics* include AGE of respondents, a continuously measured variable, GENDER, a dummy variable that takes on a value of 1 if the respondent is male, and the number of adults (ADULTS) and children (KIDS) in the household, continuously measured. Also included were levels of educational attainment and employment status, measured as dummy variables, given the data were collected categorically: LESSHS (1=person received less than a high school education), SOMECOLL (1=person attended some college), COLLPLUS (1=person attained college degree or greater), PARTTIME (1=employed 10-34 hours/week), and UNEMPLOY (1=unemployed).

Factor analysis with varimax rotation was used to reduce 12 questions representing consumer grocery store *preferences* into four factors. CONVENIENCE is a factor which was created from questions to which respondents agreed that at a downtown grocery store they would: buy prepared foods and take-out, use the deli, and buy ready-to-eat foods from a grocery store rather than eat food at a fast-food place. SPECIAL is a factor created from questions to which respondents agreed that they would: regularly use a grocery delivery service, and regularly order groceries over the phone for pick-up. STAPLES is a factor created from questions to which respondents agreed they would: buy perishable staples such as milk, bread, and eggs and buy non-food items such as paper, laundry, and toiletry products. WHYSHOP is a factor created from questions to which respondents agreed that: at a downtown grocery store, it is important to have a wide selection of locally grown produce; it is important that a downtown grocery store have competitive prices; and quality at a reasonable cost is more important than a wide selection. These are the major reasons cited in the literature for choosing a grocery store, regardless of socio-demographic characteristics (Ashman et al., 1993; Senauer et al., 1991). These factors explained 72 percent of the variation in the factors created from the 12 initial variables. Factors with Eigen values greater than one were kept for the logit estimation.

Within the independent category of respondent's previous *shopping* habits, share of income spent on food (SHARE) was created by dividing actual grocery expenditures by the median income value in each of the categories of reported income. Although food expenditures increase as income increases, Engel's Law states that the proportion of income spent on food decreases as income rises (Senauer et al., 1991). For this reason, it was decided to use percent of income respondents spend on groceries instead of separate independent variables of income and food expenditures. Preliminary analysis including both income level AND grocery expenditures showed no significance of these variables individually. Indeed, it is not the total amount spent on groceries that necessarily impacts buying decisions, it is the impact of those expenditures have on a total budget. The variable SECONDST represents the share of respondents total weekly grocery bill spent at their secondary grocery store. A higher the percentage represents a consumer who splits their "major" grocery shopping among more than one shopping venue. NOSHOP is a dummy variable that takes on a value of 1 if the respondent did not previously shop or shopped less than once a month at the grocery store that closed. Finally, TRANSPORT is a dummy variable that takes on a value of 1 if the respondent agreed that transportation is a problem when they shop. Summary statistics are presented as Table 1.

Logit Analysis.

The model was estimated using the logit procedure in SPSS. To estimate the probability of being satisfied with community-based services, we use a simple bi-nomial logit model, where the dependent variable is whether or not a respondent agreed they would shop at a downtown store. The log odds of being satisfied is written:

$$\log \frac{\text{Probability of shopping at a downtown grocery store}}{1 - \text{Probability of shopping at a downtown grocery store}} = \beta_0 + \beta_1 Z_1 + \ldots + \beta_k Z_k \qquad (1)$$

In the model estimated β_0 represents the intercept and β_k represents the coefficients on each of the variables, Z_k, included in the equation, and described above.

Table 1
Results of Descriptive Statistics and Logit Model

Variable	Definition	Descriptive Statistics	Parameter Estimate	Odds Ratio
Dependent				
PROBSHOP	1= the respondent will do major grocery shopping downtown	.52 (.50)		
Demographics				
AGE	Age of respondent	43 (19.23)	-.013(.010)	.987
GENDER	1=male	.37 [P] (.48)	-.214(.291)	.807
ADULTS	Number of adults in household	2.11 (1.41)	.108(.132)	1.114
KIDS	Number of kids in household	2.01(1.65)	-.021(.154)	.980
LESSHS	1=less than HS education	.06 [P] (.23)	-.570(.699)	.566
SOMECOLL	1=some college	.24 [P] (.43)	-.258(.434)	.773
COLLPLUS	1=college or greater	.49 [P] (.50)	.012(.385)	1.012
PARTTIME	1=employed 10-34 hours/week	.13 [P] (.33)	-.121(.446)	.887
UNEMPLOY	1=unemployed	.25 [P] (.43)	.277(.428)	1.319
Preferences				
CONVENIENCE	Factor—will purchase convenience items	.02 [P] (1.00)	.268(.154)*	1.307
SPECIAL	Factor—will use special store services	.06 [P] (1.00)	.137(.148)	1.147
STAPLES	Factor—will purchase staples	.02 [P] (.99)	1.264(.197) ***	3.538
WHYSHOP	Factor-chooses quality, location, selection, price	.02 [P] (.96)	.1001(.161)	1.106
Shopping				
SHARE	Share of income spent on groceries	.17 [P] (.15)	2.104(1.252)*	8.197
SECONDST	Share of total grocery bill spent at secondary store	.37 [P] (.55)	.416(.304)	1.516
NOSHOP	1=did not previously shop at store that closed	.32 [P] (.47)	-1.041(.307)***	.353
TRANSPORT	1=transportation is a problem when I shop	.21 [P] (.41)	1.840(.446) ***	6.295
INTERCEPT			-.186(.757)	
N=423	Chi Sq. = 222.75***			

[P]=proportion is presented; standard deviation in ( )
*=sig. < .10; **=sig. < .05; ***=sig. < .01

Results

The last column of Table 1 presents the odds ratio that a consumer will shop at a downtown grocery store, given he or she has the characteristic measured by the independent variable in question. These odds ratios are based on a transformation of the original estimated coefficients (column 4 of Table 1), which represent the log-odds of an event occurring. The actual odds ratios presented were calculated using the mean of continuous variables and the modes of dummy variables.

Within the logit model, five of the independent variables are significant (Table 1). Controlling for demographics, consumer preferences, and previous shopping habits, respondents preferences to purchase convenience items (CONVENIENCE), including prepared foods and take-out, a deli, and ready-to-eat foods, and staple products (STAPLES), including perishable and non-food items, were positively and significantly related to a respondent's odds of using a downtown grocery store for their major food shopping. Approaching significance and positive was the impact of offering special services (i.e., internet ordering and grocery delivery). Further, persons who agree that transportation is a problem when they shop (TRANSPORT) are positively and significantly more likely to shop downtown, than those without transportation problems. The larger the share of total income spent on groceries (SHARE), the greater the odds of shopping downtown. Persons who did not previously shop at the downtown grocery store that closed are only about one-third as likely compared to an individual who previously shopped at the closed store to do their major food shopping there (NOSHOP).

The model shows that the demographic independent variables and the independent variables of SPECIAL, WHYSHOP, and SECONDST were not significant predictors that an individual will do their major food shopping at a downtown grocery store. However, their insignificance is important, as it shows that persons do not make their choice to shop at a supermarket based on their age, gender, household size, education, and employment status. This is possibly because all persons have to shop for groceries, which is evident in the 126 billion dollar sales of the food industry in the United States in 1998 (Progressive Grocer, 1998).

Discussion

The goal of this consumer study was to determine whether or not there is a viable alternative for an inner-city supermarket that could be profitable and meet the needs of BOTH the community and the store. The results conclude that it certainly may be possible to meet both the needs of community food security and the demands of the grocery store industry, given the inner-city location. Based on the analysis of the logit model, consumers would be 1.3 times and 3.5 times as likely to do their major grocery shopping at a downtown supermarket if the store stocked both convenience (high profit margin) and staple items (low profit margin).

Although the variable SPECIAL (consumers would use special store services, such as a grocery delivery service or order groceries over the phone for pick-up) is not significant, these services hold the potential for a grocery store to increase it's profit margin (Progressive Grocer, 1998). In light of the issue of transportation problems in low income inner city neighborhoods, persons who reported transportation problems when they shop are 6.3 times as likely to do their major grocery shopping at a downtown supermarket. This is an important finding as studies show that convenient location is a major factor in choosing a grocery store (Ashmen et al., 1993; Cotterill & Franklin, 1995). Respondents, who did not shop at the recently closed downtown supermarket, are only .4 times likely to return to a downtown grocery store. This may be related to the poor conditions of the previous store, as store attributes, such as cleanliness and quality of products are major reasons consumers choose a supermarket (FMI, 1990; Progressive Grocer, 1998). This suggests that a potential supermarket in the downtown area should have these attributes in order to maximize it's customer base.

Controlling for demographics, consumer preferences, and previous shopping habits, the model shows that product variety and convenient location related to transportation issues, are major factors that influence a person to choose a grocery store, which is consistent with the literature (Ashmen et al., 1993; Cotterill & Franklin, 1995; Gotlieb & Fisher, 1996; Senauer et al., 1991). This also correlates with Lancaster's (1996) goods characteristics model, which states that the characteristics of a supermarket, and not the supermarket itself, are what drive a consumer to shop at a grocery store. Based on these results, supermarket operators can decide on the appropriate product mix that will increase the potential of a supermarket being profitable enough to stay afloat in a downtown location.

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Endnotes

[1] Professor, Department of Community Development and Applied Economics, Co-director of the Center for Rural Studies

[2] Research Associate, The Center for Rural Studies