A Probit Analysis of Consumer Shopping Behavior

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Abstract

This paper attempts to shed light on the Vietnamese consumer preferences and behavior. Hanoi consumer survey data has been analyzed by using a binary choice Probit model for traditional bazaars vs. supermarkets, to measure factors attracting consumers to a particular type of retail outlet. Our results show that freshness, price and proximity are important in shaping consumer choices of traditional outlet for fresh food, while price played a key role in selection of shopping outlet for processed food and drinks and non-food products. The results provide a basis for understanding the strengths and weaknesses of the old and the new retail outlet formats.

Introduction

The process of economic growth in Vietnam after the implementation of *Doi Moi* (renovation) in 1986 has rapidly expanded throughout the entire country. Before 1995, just ten years ago, most Vietnamese struggled simply to survive. Now, Vietnamese struggle to make sense of the multitude of products that have flooded their markets, the glut of retail outlet proliferation and the confusion concerning consumer choices. Instead of shopping at the traditional outlets, consumers can choose to shop at one-stop, air-conditioned markets where there is no haggling over the price. The traditional bazaar system that serves as the "central hub" for all trade activities for goods and products is now undergoing tremendous pressure from mushrooming supermarkets which did not exist in Vietnam before 1995. However, the traditional market still retains an important position in Vietnamese lifestyle; more than 90 percent of all products continue to be distributed by traditional channels. A majority of consumers still do most of their shopping at the traditional open-air markets instead of air-conditioned mini-marts or spacious supermarkets. Therefore, it is necessary to consider the question as to what are the main factors causing consumers to continue to do most of their shopping at traditional markets? It is expected that factors attracting consumers to traditional markets will provide a basis for understanding further the evolution of the different kinds of outlets.

Even though the subject has economic significance, so far, Vietnamese distribution continues to be studied very little by academics (Venard, 1996; Speece and Huong, 2002; Cadilhon *et al.*, 2006). To the best of our knowledge, there are only very rare published academic studies on the consumer side relating to traditional bazaars and modern retail outlets in Vietnam. The purpose of this study is, therefore, to provide information about consumer preferences and behavior based on consumer survey data from Hanoi, Vietnam. This survey data has been analyzed by using a binary choice Probit model for researching consumer attitudes toward the traditional bazaar vs. the supermarket in order to measure the factors influencing consumer decision-making related to the selection of a particular retail outlet to do their shopping for particular types of products. The results provide a basis for understanding the strengths and weaknesses of the old and the new retail outlet forms. An analysis of the type carried out and described in this paper has only been attempted in a few previous studies of traditional retail stores vs. supermarkets (Goldman, Ramaswami and Krider, 2002; Goldman and Hino, 2005). However, our paper investigates not only consumer behavior related to the selection of retail outlet for food, but also for non-food products. This is an important difference compared to previous studies that concentrate on food retailing system. This paper is organized as follows: Section 2 discusses the distribution environment in Vietnam. Section 3 details the methodology for the study. Section 4 summarizes the empirical results and section 5 raises some discussions. We conclude our study in Section 6.

Distribution Environment

Vietnam carried a comprehensive reform program (*Doi Moi*) in 1986, implying a step-by-step process of change from a planned economy to a market economy. With the liberalization of commercial activities and prices, private sector business activities have continuously increased. The country has experienced strong economic growth in recent years. Average GDP growth was over 7.5 percent from 2001 to 2005. This has resulted in annual per capita GDP to a level of US$1,395 in the urban center of the country. Household revenues have increased and changes in food consumption are appearing. Families with growing incomes are buying more food rather than producing it themselves (Cadilhon *et al.*, 2003). Furthermore, with an effort from the government to encourage the development of modern distribution systems, Vietnam will continue to experience significant changes in food and household goods distribution systems.

Retailing in Vietnam: a Case of Hanoi

Vietnam's retailing industry is comprised of new, emerging retail formats and older, more traditional retail formats (organized bazaars, mom and pop stores and "frog bazaars"). An *"organized bazaar"* (formal bazaar) is defined as a market established by the local authorities. A management board usually manages this kind of market. Hanoi has more than 120 markets. Most of organized bazaars were constructed from concrete and are roofed facilities. However, they have limited and poor facilities in such categories as water supply and waste treatment systems. They lack storage facilities and refrigeration and do not process fresh foods into branded goods for resale. The traditional *"mom & pop"* stores are family-owned retail outlets that sell a limited variety of processed food, dry goods, drinks, household supplies. Specialized stores have emerged as well. Many streets often specialize in a single category of products. There are often 200-300 identical mom & pop stores along a few hundred meters of a single street (Waibel, 2004). They have the characteristic of being the only sales points to offer competitive brands for the same product category. The sales area is nearly always very small often being less than 10 m^2. Besides the boom in private retail shops, Hanoi also has become the prime area for the booming, spontaneous development of informal bazaars called "*Cho Coc*"- frog markets. The sellers lay out their wares along streets or road or outside the formal bazaars, or wherever it is convenient for customers to shop. The operators of these informal bazaars are mainly farmers and the poor. They commute daily from the surrounding countryside. Because of the small scale of operations, their operations are easy to relocate or flee the police. The city authority has planned for some time to dismantle all these markets. However, the local authorities have been completely unable to suppress this kind of selling activity.

Over the past ten years, Vietnam has experienced an increase in the number of supermarkets, especially in big cities such as Ho Chi Minh City (HCMC) and Hanoi. The first supermarket was a state-run enterprise opened in HCMC in 1993, named "Minimart". Hanoi got its first supermarket named "Minimart Hanoi" in March, 1995. The number of supermarkets has been increasing rapidly from only 10 supermarkets in six of 64 cities and provinces in 1995 to 210 supermarkets in thirty cities by the end of 2004. Hanoi and HCMC, the country's two biggest cities, have 155 supermarkets.

Foreign chains such as the French Bourbon Group, Metro Cash & Carry, Japan's Seiyu, and Malaysia's Parkson have all gained a foothold in the market. Initial supermarket successes have prompted both domestic and foreign investors to expand their business operations in Vietnam.

Data and Methodology

Hanoi provided a convenient location for the survey because the city's population and economic base are roughly representative of the ratios of industrial development and population diversity. The detailed consumer survey was conducted over one month period from 1st March 2006 to 1st April 2006. Over 2,000 questionnaires were sent to Hanoi consumers. A total of 570 questionnaires were returned and after eliminating un-completed questionnaires, the remaining 413 questionnaires were used as the sample. This sample is biased towards females (350 females and 63 males) who are most often responsible for shopping activity in their families. The sample survey is also biased towards higher educated (more than 80 percent), higher income segments in comparison with the general population characteristics in Hanoi. But if one examines the urban areas only, the sample closely resembles the general population characteristics in the Hanoi urban area. It was anticipated that those consumers who have income would be willing to go shopping at supermarkets. It was also anticipated that those consumers who have higher education would have a better perception about both kinds of traditional bazaar and modern retail format.

Empirical Results and Discussion

Factors Affecting the Selection of Traditional Bazaars

Table 1 summarizes retail outlet types where shoppers do most of their shopping for products.

Table 1: Retail outlet consumers do most of their shopping at

Retail outlets	Fresh food		Processed food & drinks		Non-food items	
	Number	%	Number	%	Number	%
Frog markets and hawkers	83	20	3	1	2	1
In-door markets	303	73	83	20	30	7
Supermarkets	27	7	119	29	58	14
Mom & pop store and agents			208	51	323	78
	413	100	413	100	413	100

The findings above suggest that traditional retail formats still dominate in retailing of both food and non-food products. Traditional indoor markets dominate fresh food while non-food products are mainly distributed through mom and pop stores (specialty outlets). The results also show that supermarkets are gradually gaining a foothold regarding processed food & drinks and non-food products.

The respondents were asked to indicate the importance using a one to five level of scale for a list of factors (reasons) that influence their decision–making concerning selecting the type of retail outlet where they do most of their shopping. This data was used to compare the traditional markets (the retail outlet where consumers do most of their shopping) with the modern outlets to find the main reasons attracting them to given shopping location types and also those factors applying to supermarkets. The Probit model for binary choice was applied to analyze two major questions. The first question was why shoppers choose to do most of their shopping for fresh food at indoor markets (choices between indoor markets and supermarkets). The second question was why shoppers choose to do most of their shopping for processed food and non-food products at mom and pop stores (choices between mom and pop stores and supermarkets). The coefficients of the Probit model were estimated using Stata (V9.0) (see Maddala, 1997). The Chi-square test statistic, pseudo R-square and percent correctly predicted showed the model is highly significant. The results are reported in Table 2.

Table 2. Factors attracting to traditional bazaar - Results from the Probit binary choice model

	Fresh food		Processed food & drinks		Non food products	
Variable	Coefficient	Marginal probability	Coefficient	Marginal probability	Coefficient	Marginal probability
FRESH	0.45**	0.0012				
NEWGOODS			-0.004	-0.0013		
QUALITY					-0.24**	-0.0431
SAFETY	-0.46*	-0.0012	-0.15**	-0.0543		
CHEAP	0.30**	0.0008	0.22***	0.0789	0.19**	0.0339
USUALSELLER	0.76***	0.0020	0.32***	0.1171	0.13	0.0239
CONVENIENCE	0.32**	0.0008	0.05	0.0182	0.09	0.0167
SERVICE	0.18	0.0005	-0.05	-0.0173	0.09	0.0167
NOBARGAIN	-0.42***	-0.0011	-0.18***	-0.0641	-0.33***	-0.0584
SEX	0.23	0.0005	-0.16	-0.0587	-0.45**	-0.0969
CHILD	0.55	0.0013	0.20	0.0735	-0.18	-0.0333
AGE	0.06	0.0002	0.06	0.0212	0.13	0.0234
INCOME	-0.44**	-0.0011	0.04	0.0148	0.03	0.0055
TRANSPORT	-1.31***	-0.0052	-0.44***	-0.1519	-0.68	-0.0815
CONSTANT	0.54		0.43		2.35***	
Log likelihood	-35.52		-173.08		-130.21	
Number of observations	330		327		381	
LR chi2 (12)	115.87		82.64		64.63	
Prob > chi2	0.0000		0.0000		0.0000	
Pseudo R2	0.62		0.19		0.20	
Percent correctly predicted	98.20		85.58		97.83	

Note: ***and ** and * indicate coefficients are significant at the 0.01 and 0.05 and 0.1 levels, respectively.

The results show that freshness (*FRESH*), cheap price *(CHEAP)* and convenience (*CONVENIENCE*) are significant factors attracting consumers to indoor markets for fresh food while an increase in income (*INCOME*) or higher concern about the safety of fresh food (*SAFETY*) increases the probability of choosing supermarkets. For processed food and drinks and non-food products, price *(CHEAP)* appeared to be important in shaping consumer choice of shopping place. Establishing relationships with sellers (*USUALSELLER*) plays a role in selection of shopping place for both fresh food and processed food & drinks, but not in case of non-food products. Except for fresh food, it is interesting to note that income (*INCOME*) did not have a significant effect in shaping the selection of outlet for shopping for processed food & drinks and non-food products. The impact of no need to bargain (*NOBARGIAN*) was found in three models, suggesting that a consumer who wants to bargain would be likely to shop at traditional outlets. Transportation means (*TRANSPORT*) play a role in shaping consumer choice of outlets for fresh food and processed food and drinks, but not for the case of non-food products. For the factor of good service provided by the seller (*SERVICE*), the respondent who has children less than 6 years old in their family (*CHILD*) and the age of the respondent (*AGE*) appeared to be relatively unimportant in choosing traditional markets vs. supermarkets throughout the three models.

Discussion and Conclusion

Supermarkets are starting to develop in Vietnam. The new markets could eventually change the way the Vietnamese food-supply distribution system operates. However, for now it appears that there is room in the food-selling sector for the old and the new to coexist. This study provides many empirical reasons to support this observed tendency. Traditional indoor bazaars are characterized by their proximity to the consumer and their social character. Consumers go there not only for buying many different things, but also to meet friends and communicate with other people. The data shows that there remains a strong following for traditional bazaars among consumers who have time to search each vendor's offerings for the freshest produce and to argue about prices. Consumers still do most of their shopping for fresh food in traditional bazaars. Touching, feeling and smelling the produce seem more important than one-stop, air-conditioned outlets when a consumer wants to buy fresh produce, fish or meat. Traditional bazaars for fresh food are still very competitive in terms of price, freshness and proximity. The data from the survey shows that supermarkets have to compete with mom and pop stores for the same group of customers where price plays an important role in consumer purchasing decisions for processed food, beverages and non-food products. Thus, supermarkets operate in a very competitive environment and must satisfy consumer needs that are matched and surpassed by traditional mom and pop stores. However, supermarkets can likewise attract consumers by opening stores near their homes and adopting store layouts to encourage social interaction. The existence of a given kind of market tends to depend on government policies. Obviously, the government is encouraging investors from all economic sectors to construct more modern type supermarkets. However, the government still positions the existing bazaar network as the basis of the national market network. Because of this support from the government, the traditional bazaars are also on the way to being updated and increased. With the improving infrastructure and a better image as a place of business, they suit Vietnamese shopping habits. The bazaars function well and can compete with the modern forms of retailing.

This quantitative study used consumer survey data from Hanoi and applied a Probit model for analyzing choice of shopping outlet, traditional bazaars or supermarkets. We showed that freshness, cheap price and proximity are the key factors attracting consumers to traditional indoor markets for fresh food, while an increase in income or higher concern about safety of fresh food increases probability of choosing a supermarket. For processed food & drinks and non-food products, price appeared to be important in shaping consumer choice of shopping outlet type. Establishing relationships with sellers plays a role in selection of shopping outlet for food, but not in case of non-food products. With the exception of fresh food, it is interesting to note that income did not have a significant effect in shaping consumer selection of shopping outlet for processed food & drinks and non-food products. This paper is the first empirical study on Vietnamese consumers with the objective of providing a better understanding about Vietnamese consumer shopping behavior. Our results are similar to the studies of consumer behavior in Hong Kong by Goldman, Ramaswami and Krider (2002) and studies in Israel by Goldman and Hino (2005). However, in this paper we do not provide a theoretical analysis relating to our findings. This will be left for the future research. Another important issue that needs to be studied is whether our results are shared across other developing countries.

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