

FACTORS INFLUENCING CONSUMPTION OF IMPORTED APPLES IN HANOI

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ABSTRACT

The aims of this research were to identify the factors affecting consumption of imported apples in Hanoi. A random sample of 80 respondents in Hanoi was selected to collect data on their consumption of imported apples. Methodologically, a statistical analysis was used to identify the preferences of consumers in purchasing imported apples and the two-step econometric technique was applied to measure the effects of the socio-economic and characteristics of the market on consumption of imported apples in Hanoi. The integrating results from the two models showed that the income of the consumer has strongly positive effects on the consumer's decisions to buy and consume imported apples in Hanoi. At a lighter level, the age of the consumer and information about imported apples also have positive effects on the probability of imported apple purchasing. In contrast, the price of apples has a negative effect on the consumer's decision to buy imported apples. Finally, several implications of this study highlighted the contribution of the research to theory by enriching the body of literature and marketing perspective by showing the worthy bases for the government to develop the market and for imported apple traders in making their business behaviors more consistent.

Keywords: Consumption of imported apples, Hanoi

Phân tích các nhân tố ảnh hưởng đến tiêu dùng táo nhập khẩu ở Hà Nội

TÓM TẮT

Mục đích của nghiên cứu này là chỉ ra được các yếu tố ảnh hưởng đến tiêu dùng táo nhập khẩu tại Hà Nội. Số liệu phục vụ nghiên cứu thu thập từ 80 người được lựa chọn một cách ngẫu nhiên ở Hà Nội về việc tiêu dùng táo nhập khẩu của họ. Về mặt phương pháp luận, phân tích thống kê mô tả được sử dụng để xác định tiêu chí của người tiêu dùng trong việc mua táo nhập khẩu và mô hình phân tích kinh tế lượng hai bước cũng được áp dụng để đo lường tác động của các nhân tố kinh tế-xã hội và đặc điểm của thị trường đến tiêu dùng táo nhập khẩu tại Hà Nội. Kết quả phân tích cho thấy thu nhập của người tiêu dùng có tác động tích cực đến cả hai quyết định của người tiêu dùng về việc mua táo nhập khẩu hay không và số tiền bình quân mỗi tháng cho tiêu dùng táo nhập khẩu là bao nhiêu tại Hà Nội. Ở mức độ nhẹ hơn, độ tuổi của người tiêu dùng và thông tin về táo nhập khẩu cũng có những tác động tích cực đến khả năng mua táo nhập khẩu. Ngược lại, giá của táo có tác dụng tiêu cực đến quyết định của người tiêu dùng xem có mua táo nhập khẩu hay không. Ngoài ra, kết quả nghiên cứu cũng đã nêu ra được những khuyến nghị để làm căn cứ tham khảo cho các cơ quan Nhà nước và người kinh doanh táo nhập khẩu.

Từ khóa: Hà Nội, tiêu thụ của táo nhập khẩu.

1. INTRODUCTION

Along with the economic development of the country, the income of the majority of the population is increasing, especially in urban areas. Increased income is cited the main

criterion for rising demands for food and other goods, especially for clean products, sufficient origin information, and high quality.

Currently, there are many stores that provide imported apples from the United States, New Zealand, Australia, etc. in Hanoi.

Consumers can easily buy imported apples in stores, supermarkets, grocery stores or traditional markets. In recent years, consumption of imported apples in Hanoi as well as in big cities in the whole country has increased strongly and stably. Apple imports from developed countries have been recognized for quality by consumers in Hanoi. However, to be able to offer guidance to consumers as well as sellers of imported apples in Hanoi, makers of agricultural policy may need guidance and recommendations on the human factors affecting consumption of imported apples in the province of Hanoi.

This paper aims to evaluate the factors affecting consumption of imported apples in the Hanoi market and presents analysis results that offer suggestions for both government and traders/importers on how to behave in the imported apple market.

2. LITERATURE REVIEW

In general, an increase in a consumer's income will create a potential market for firms to expand their business. Recent consumer research suggests that food consumption is becoming increasingly diverse and consumers are growing more concerned about the quality, safety and nutritional content of their food (Thang and Popkin, 2004; Phuong *et al.*, 2013), and their buying behavior depends on many internal factors (psychological and personal factors) and external factors (cultural and social factors) (HawKins and Mothersbaugh, 2009).

Regarding factors influencing consumption of imported apples, socio-economic and individual characteristics (e.g. gender, age, income, education) and the level of influence of information about the apples (e.g. color, weight, origin) impact the consumption of imported apples. Accordingly, the potential of increasing a consumer's income and increasing his/her level of education have positive effects on the consumption of imported apples.

Several studies have found that gender and information about imported apples significantly

influence decisions on imported apple purchases. Being female was found to be significant in affecting imported apple expenditures. Females were also generally more health-conscious than men (Radam *et al.*, 2010). Additionally, the consumer was also generally concerned about price and more interested in purchasing safe imported apple products.

The above literature summarizes the key factors affecting the consumption behavior of Hanoi consumers on imported apples. This research aims to add to this available literature by analyzing the factors affecting imported apple consumption of the Hanoi market. To achieve the purposes of this research, variables on environmental and personal factors were applied.

3. DATA AND RESEARCH METHODS

3.1. Analytical framework

The analytical framework of the research for examining the influences of the personal and environmental factors on imported apple consumption of the Hanoi market was proposed based on a review of the literature (Figure 1). Among the key factors considered that may affect the imported apple consumption of Hanoi consumers, the analysis identified two critical groups of factors. The first group comprised the characteristics of individual Hanoi consumers (e.g. household income, main source of income, number of persons in the household, education, gender and age of consumer). The second group included environmental factors such as characteristics of the imported apple market (e.g. purchasing convenience, price and purchasing safe products).

3.2. Empirical models

In the research evaluating the influence of factors on milk consumption in northern Vietnam, Trung *et al.* (2014) used the two-step method for analysis. Similarly, we use this model to evaluate the factors affecting imported apple consumption of households in Hanoi. Accordingly, a two-step econometric model is used to estimate factors affecting imported apple

consumption of Hanoi consumers. To measure the effects of personal and environmental factors on imported apple consumption of Hanoi consumers, the Heckman two-step method for estimating two related imported apple consumption decisions on whether or not to purchase imported apples and imported apple consumption expenditures was used. In the first step, a probit model was employed to measure the influences of the factors, including the individual characteristics of the Hanoi consumer (H) and the characteristics of the imported apple market (M), on the decisions to purchase imported apples. In the second step, an OLS regression as a conditional truncated sub-model was conducted to examine the factors affecting imported apple consumption expenditures of Hanoi consumers.

The probit technique allows an examination of the effects of a number of variables on the underlying probability of a dichotomous dependent variable. This econometric tool is useful for binary responses (yes, no) to the imported apple consumption of Hanoi consumers. In this case, the model helps predict the likelihood that a consumer will purchase imported apples, given a set of related factors. The dependent variable takes a value of unity if a consumer purchases imported apples and zero, otherwise.

Using the estimates of the probit model, the probability that a Hanoi consumer will purchase

imported apples can be expressed as follows:

$$p_i^* = \alpha + \sum_j \beta_j H_{ij} + \sum_k \gamma_k M_{ik} + \varepsilon_i \quad (1)$$

Where β and γ are the estimated vectors of explanatory variables, H_{ij} and M_{ik} , respectively, on the probability of decision making for the consumers to purchase imported apples (p_i^*).

Regarding the imported apple consumption, the dependent variable in the estimated model was referred to as the amount of money that a consumer spends for imported apple consumption. In the case that a Hanoi consumer does not purchase imported apples, imported apple consumption was recorded as zero. Given a set of factors for both the characteristics of consumers in Hanoi (H) and the characteristics of the apple market (M), consumption of imported apples for consumer i was hypothesized as below:

$$y_i = \prod_j H_{ij}^{\beta_j} \prod_k M_{ik}^{\gamma_k} e^{\omega_i} \quad (2)$$

Taking the logarithm of both sides of Eq.3, the level of expenditure sub-model was restructured as follows:

$$y_i^* = \sum_j \beta_j \ln H_{ij} + \sum_k \gamma_k \ln M_{ik} + \omega_i \quad (3)$$

Where y_i^* measures the logarithm of the amount of money for imported apple consumption of the i^{th} Hanoi consumer as a function of vectors of the independent variables, H_{ij} and M_{ik} , and unobservable factors.

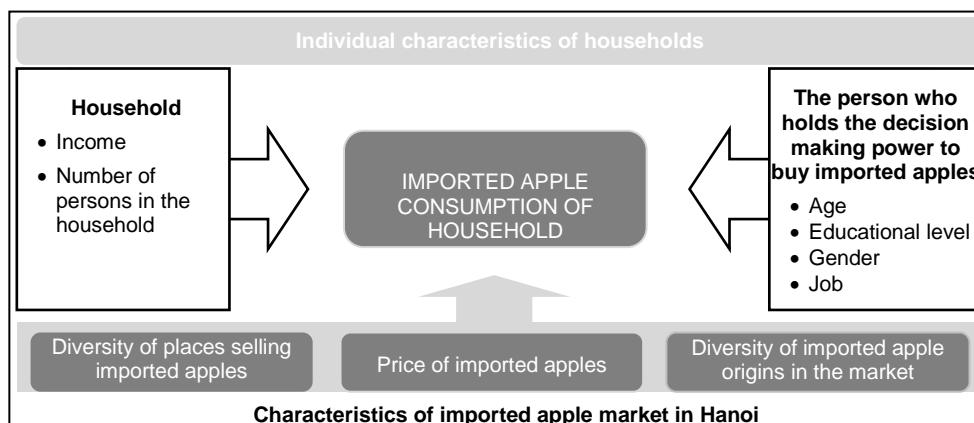


Figure 1. Analytical framework of the research

Source: Adapted from Trung et al., 2014

Table 1. Sample Statistics of Respondents

Characteristics		No. of respondents	Structure (%)
Urban	Hoan Kiem	30	37.50
	Ha Dong	30	37.50
Sub-urban	Gia Lam	20	25.00
Total		80	100.00

Source: Summarized from survey data, 2015

If the error terms in these two models (ϵ_i and ω_i) are uncorrelated, the imported apple consumption expenditure model can be estimated by Ordinary Least Squares (OLS). On the other hand, the Heckman two-stage method is based on the assumption that a series of variables can influence a Hanoi consumer's decision to purchase imported apples and another series of them can influence the imported apple consumption expenditures of the Hanoi consumer. In this case, the Inverse Mills Ratio is used as an additional regressor in the imported apple consumption expenditure model which is only run for the Hanoi consumer that decides to purchase imported apples. If the simple t-test suggests that the Inverse Mills Ratio is not significantly different from zero, the OLS regression can be used.

3.3. Data collection

Data for the empirical analysis was obtained from the Hanoi consumers surveyed. The data was collected through direct interviews of 80 individual consumers located in Hanoi (Table 1). The survey was conducted from January to March 2015. A structured questionnaire was designed with four sections: personal factors, socio-demographic information of the respondents, consumer's decisions to consume imported apples and environmental factors related to the characteristics of the apple market.

4. RESULTS AND DISCUSSION

4.1. Identifying the most preferred criterion of consumers in buying imported apples

To understand the imported apple preferences of Hanoi consumers, respondents

were asked to identify their most preferred criteria in purchasing imported apples. Even though 60% of the consumers mentioned that quality is a factor strongly affecting imported apple purchasing, the criteria evaluated as the most important were the price of imported apples and income, as responded by 25% of the consumers (Figure 1). This implies that the elasticity of the price of imported apple consumption of urban consumers is high and partly shows that the Hanoi consumer generally has a high income. Price was closely followed by convenience in purchasing imported apples, which was cited as the most preferred criteria in purchasing imported apples by 24% of the people. The proportions of origin, brand and quality of imported apples were 21%, 14% and 9%, respectively.

Respondents also indicated how they get information about the products and agreed or disagreed with several statements revealing their perceptions about imported apples. Considering the proportion of urban consumers cited for each information source (Figure 1), it appeared that consumers generally agreed (55% of the households) that the media is the most popular medium for understanding the characteristics of products such as price, quality, and nutritional contents when purchasing imported apples. The advice of friends (25%) and a salesperson's consultancy (22.5%) were also important sources of product information for the Hanoi consumer when deciding to buy imported apples.

One of the most important issues was that marketers need to expand their businesses in areas where the Hanoi consumer often buys imported apples. The proportion of respondents indicated in Figure 1 shows where they usually buy imported apples. Over 55% of the surveyed people indicated that they often buy imported apples in a supermarket and roughly a quarter of them (23.8%) frequently choose fruit agents in buying imported apples. Meanwhile, only 16.3% of the consumers often purchase imported apples in a market and about 3.8% of the respondents mainly buy imported apples from hawkers.

Table 2. Characteristics of the respondents

	Characteristics	No. of respondent	Structure (%)
Gender	Male	59	73.8
	Female	21	26.3
Age	< 35	26	32.5
	35-50	40	50.0
	>50	14	17.5
Job	Business	13	16.3
	Employee or official	18	22.5
	Agriculture	8	10.0
	Student	14	17.5
	Housework	24	30.0
	Others	3	3.8
Educational level	High school	24	30.0
	Graduate university (BSc)	35	43.8
	Post graduate	16	20.0
	Others	5	6.3
Monthly income (million/person)	< 2	32	40.0
	2 - 6	19	23.8
	6 - 10	10	12.5
	>10	19	23.8

Source: Calculated from survey data, 2015



Figure 1. The most preferred criteria that consumers use to make decisions in buying imported apples

Source: Calculate from survey data, 2015

4.2. Measuring the factors affecting decisions to buy imported apples

The estimated results from the binary choice in the probit model of imported apple consumption decisions are presented in Table 3. This shows the estimated coefficients and the goodness of fit for the model. The likelihood ratio

statistic (LR) suggests that the whole estimated regression model is significant at the 1% level ($p < 0.01$). Therefore, this model is reliable for future analyses. The main hypothesis under examination is whether the presence of the personal and environmental factors significantly affect the probability in making

decisions when buying imported apples. Most of the explanatory variables have a significant effect on Hanoi consumers' decisions, except for the occupational characteristics of consumers, members of the family, educational level and gender of consumers.

Results showed that, of the 8 variables considered, only 6 variables were statistically significant: monthly income per person in the household, age of the consumer, place of purchase, price of the imported apples, origin of the imported apples, and channels of information about imported apples. The two variables that were not significant were number of family members and gender of the consumer.

Among the statistically significant variables, age of the person who holds the power to make decisions about imported apple consumption, place of purchase, and the source and channel of information have a strong impact on a consumer's decision to buy apples. Accordingly, if the income of the consumer increases by 1 million VND per month, the probability of the decision to buy will increase by 9.3%. This can be explained by the fact that while apple buying increases with increased incomes, consumers also want to buy imported fruits higher in quality for their consumption. If the age of the consumer increases by one year, the probability of the consumer's decision to purchase will increase by nearly 31%. The reason given is that older people often have stable jobs and higher incomes. They also have more experience and pay attention to food safety more than younger people. If buyers choose the supermarket as the place they usually buy imported apples, the probability that the buyer wants to buy increased by over 30%. Most consumers still choose to buy imported apples at the supermarket because supermarkets have better service and the consumers believe that supermarkets provide products with more quality than shops or traditional markets. Moreover, if consumers choose to buy apples originating from developed countries, the probability they want to buy increased by nearly 20%. This can be explained

by the fact that consumers value fruits imported from developed countries because there is more fruit produced and better quality preservation. Further, if the source of information to consumers is the mass media, the probability of consumer purchases will increase by 18%. Normally, consumers will receive information from media sources quickly and directly, leading to their purchase decision and certainly.

Of the environment characteristics affecting the imported apple purchasing decision of the Hanoi consumer, the effect of price was negative. For example, if the price of apples increase by 1,000 VND per kg then the probability of the decision to buy apples decreased by nearly 20%. Normally, the perception of the Hanoi consumer on the imported apple price was also negative with the probability of their imported apple purchasing decision. If the Hanoi consumer considers the price of imported apples as the most important criterion for making the decision to buy imported apples, then it implied that the budget for imported apple consumption of the Hanoi consumer was limited, and in this case, the probability of imported apple consumption was reduced by over 22%.

4.3. Estimating the factors affecting a consumer's decision to consume imported apples

To test the sample selection bias, the model of imported apple consumption expenditures was first estimated using the Heckman two-stage procedure. All the variables assumed to affect the imported apple consumption expenditures of Hanoi consumers were included in the model and most of them were found to be significant in the model. Results from the non-nested test indicated that the model can be re-estimated using an OLS regression. A linear regression model was estimated in the forms of a logarithmic function. The independent variables used in the linear regression model included characteristics of the Hanoi consumers (i.e., income level), personal characteristics of the Hanoi consumers (i.e., age, gender,

perception of imported apple price and quality/safety/origin) and characteristics of the imported apple market (i.e., place and communication to buy imported apples).

Table 3. Results of the probit model of the decision to buy imported apple

Variables		Coefficient	Z value	P > z	
Sign	Explanation				
Income	Monthly income per person in the household (mil.VND)	0.093183	*	1.96	0.053
Size	Number of family members (persons)	0.089772	NS	0.56	0.575
Age	Age of the person who holds the power to make decisions about imported apple consumption (year)	0.305238	*	2.65	0.009
Price	Price of imported apples (thousand VND/ kg)	-0.22257	***	-1.68	-0.096
Gender	Dummy variable, (=1) if the person who holds the power to make decisions about imported apple consumption in the household is female and (=0), others.	0.016439	NS	0.22	0.825
Place	Dummy variable, (=1) if the place where the respondent often buys imported apples is a supermarket and (=0), otherwise.	0.307503	*	2.57	0.042
Origin	Dummy variable, (=1) if imported apples are from developed countries and (=0), otherwise.	0.198838	*	2.06	0.018
Information	Dummy variable, (=1) if the source of information to consumers is the mass media and (=0), otherwise.	0.184626	*	2.41	0.018
_Cons	Constant	-2.07262	**	-2.55	0.012
Number of obs = 80					
LR chi2(7) = 36.60					
Prob > chi2 = 0.0000					
Pseudo R2 = 0.7584					

Notes: *, **, and *** are significance levels at 10%, 5% and 1% levels, respectively

Table 4. Results of the OLS model of the decision to consume imported apples

Variables	Coefficient	t value	P > t	
Income	1.004646	*	2.56	0.012
Size	.728437	NS	0.55	0.581
Age	1.676636	*	1.78	0.079
Price	0.044815	**	2.22	0.030
Gender	.340352	NS	0.56	0.579
Place	.472512	*	0.42	0.673
Origin	1.914543	*	2.42	0.018
Information	1.299379	*	2.06	0.043
IMR	7.562847	*	0.58	0.567
R-squared	0.5297			
F(9,70)	8.76			
Number of obs.	80			

Notes: *, **, and *** are significance levels at 10%, 5% and 1% levels, respectively

As shown in Table 4, the estimated results revealed that 52.9% of the changes in mean amount of money of the Hanoi consumer can be explained by the independent variables in the model. The F statistic was 8.76 and the probability value showed a total significance of the fitted regression at a 1% level. The considered model is therefore reliable for analyzing the next results.

The positive significant estimated coefficient for the income variable indicated that, on average, if the Hanoi consumer's income increases by one million VND per month, it will cause an increase in expenditures of imported apples by 1%, holding all other things constant. This implies that the Hanoi consumer who has higher income levels will buy more imported apples to satisfy their consumption needs. Thus, as the standard of living of the consumer is improving, the marketers should take the opportunity to expand their business operations. If personal income increases, individuals can buy more goods at a given price.

Regarding the personal characteristics of the Hanoi consumer, the age of the person holding the power to make decisions about buying had a positive effect on the average expenditures of imported apples of Hanoi consumers. This suggests that a one year increase in age of the person holding the decision making power to buy will lead to an increase in the average expenditure of imported apples by 1.68%.

Similarly, the Hanoi consumer considered the price of imported apples as the most important criterion in buying imported apples. Data analysis shows that, when prices increase by 1,000 VND per kg it leads to an increase in the consumer's expenditure for imported apples by over 0.04%. This can be explained by the fact that the price of imported apples in supermarkets is often higher than in markets. However, the quality of imported apples being sold in supermarkets is much higher than the dealers sell in traditional markets or fruit shops. So consumers trust and buy from supermarkets.

Finally, the estimated coefficient of the apple market environment showed that if the respondent considers the place for buying imported apples, then, the average expenditure of imported apples of Hanoi consumers in one month will increase by nearly 0.5%. This indicator suggests that establishing a sales network through developing systems in retail stores or stalls in the Hanoi market is crucial for firms that are expanding their business in the Hanoi market. If consumers choose to buy imported apples from a developed country, the average expenditure of imported apples for the consumer will increase by over 1.91%. Simultaneously, if the consumer receives information from mass media, the amount of money for consuming imported apples in one month will increase by nearly 1.2%. This suggests that consumers still trust the quality of fruit imported from developing countries, and through the mass media, information on the origin and quality can be directly delivered to consumers.

5. CONCLUSIONS AND IMPLICATIONS

This paper identified the personal and environmental factors that were considered to influence imported apple purchasing decisions of Hanoi consumers such as whether to buy or not buy imported apples and the buying power for purchasing. These factors are household income, main income source of the household, age, gender and educational level of the consumer, and the household head's perception of imported apple price and origin. The impacts of these factors on imported apple consumption of consumers in Hanoi were examined using a two-step econometric technique.

Price is an important factor in deciding to buy imported apples for consumers in Hanoi. Thirty-eight percent of those surveyed agreed that the price of imported apples is an important factor in their purchasing decisions. Other factors such as color, freshness, weight and preservatives also have a significant impact on the purchasing decisions of consumers. Consumers still trust that the supermarket is the place to buy imported apples because they

trust the quality. Up to 55% of respondents answered that they still prefer buying imported fruits in the supermarket rather than at fruit markets or agents.

There are several implications of this study. In terms of theoretical contributions, the research enriched the body of literature about consumers' intentions to consume imported apples. The findings of this research could provide a foundation for future research in this topic and contribute significantly to developing a better understanding of imported apple consumption of consumers in Vietnam. The results of this research showed that the income of consumers buying imported apples had the highest effect among other factors on the probability of imported apple purchasing of Hanoi consumers. Under the marketing perspective, the findings of this study help traders and importers better understand the consumers' preferences and characteristics of the imported apple market in Hanoi. Accordingly, factors such as imported apple price, nutritional quality of imported apples, preservation of apples and place of imported apple buying were considered as worthy bases for the trader/importer to determine their target consumers in Hanoi. Besides that, the results of this research would be useful to traders/importers and businesses involving imported apples to further improve their products and to be more competitive in the market.

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