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Customer Perception, Price and Demand Analysis of Supermarkets in Dhaka City

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ABSTRACT

This paper estimates the customer perception about supermarkets and also tries to estimate the determinants which are responsible to satisfy the customers of supermarkets in Bangladesh. For empirical estimation we use primary data from 290 respondents. The respondents are customers of selected supermarkets in Dhaka city. We use logistic regression to identify the factors. Thus age, sex, education level, monthly household income, monthly household expenditure, monthly frequency of visit to Supermarket, availability of (almost) all products and price of the products are significant predictors of satisfaction level with regard to supermarket in Bangladesh.

Keywords: Supermarket, Logistic Regression, Bangladesh.

1. INTRODUCTION

Supermarket diffusion in developing countries has occurred in three waves, so far, starting in the 1990s with much of South America, East Asia (outside China) and South Africa. This was followed by a second wave in the mid-to-late 1990s, including Mexico, Central America and much of Southeast Asia. In the late 1990s and early 2000s, a third wave hit China, India and Vietnam. According to Thomas Reardon, a professor at the Department of Agricultural, Food and Resource Economics at Michigan State University, Bangladesh is part of a fourth wave that just barely has emerged in the last few years. The American researchers feel & it is likely that the diffusion of supermarkets will be quite slow for the fourth wave, compared to the first three waves. The reason is that the key socioeconomic changes necessary for a change in the retail environment are

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happening in Bangladesh at a pace much slower than, for example, in India. These changes are acting as a driving force behind supermarket diffusion including increasing urbanization, increasing number of women working outside their home (which leaves them with less time for shopping of essentials), and increasing incomes per capita.

Supermarkets dominate food sales in developed countries and are rapidly expanding their global presence. supermarkets have been flourishing in developing countries, especially throughout Latin America (Reardon et al. 2003; Codron et al. 2004; Traill 2006).Now, supermarkets control 50-75 percent of the retail food industry in countries such as Brazil and Costa Rica (Reardon, Timmer, and Berdegué 2004). supermarkets have also been spreading from metropolitan areas to semi-urban and urban-slum areas and have evolved from providing high-price luxury food items to supplying massively produced cheap canned and processed foods (Hu et al. 2004; Neven and Reardon 2004; D'Haese and van Huylenbroeck 2005; Reardon, Berdegué, and Timmer 2005; Neven et al. 2006). Currently, supermarkets are no longer shopping places for only upper and middle class households but also for relatively poor households (Hu et al. 2004; Traill 2006).

The rise of supermarkets in developing countries has received considerable attention in the development economics literature over the past few years (Reardon et al. 2003). That literature shows that (1) supermarkets are spreading quickly in urban areas; (2) supermarket chains are modernizing their product procurement systems, differentiating them from those used by traditional retailers and wholesalers. In the late nineties and early 2000, a few supermarkets have sprung up in Dhaka. Foremost among them are Agora, Meenabazar and Nandan. They can be called big departmental shops or mini supermarkets. But they also provide retailing of fresh fruits, vegetables, meat and fishes. Such markets are located only in Dhanmondi and Gulshan areas. Generally, people in higher income bracket are the customers (A M M Shawkat Ali, 2004). At present, people in mid income level also become the customers of supermarkets. Now supermarket spreads rapidly all over the country. Also peoples are more interested to go supermarkets. Shopping environment is one of the main reasons of interest in supermarkets. Another reason is that all products are available in one place and it reduces time and labor of the peoples. This paper estimates the customer perception about supermarkets and also estimates which factors are responsible to satisfy the customers of supermarkets in Bangladesh.

2. OBJECTIVES OF THE STUDY

The article has the following objectives:

i. To estimate the customer perception about supermarket in Bangladesh.

ii. To estimate the customer satisfaction on price and demand of different products of supermarket in Bangladesh. \

iii. To determine which factors are responsible to satisfy the customers of supermarket in Bangladesh.

3. LITERATURE REVIEW

The first wave of supermarket diffusion occurred in richer countries in Latin America. The second wave followed in East and South-East Asia and Central Europe, and the third in small or poorer countries of Latin America, Asia and Southern and then Eastern Africa. The fourth wave is beginning to affect South Asia and Western Africa. Major food retailing companies in the UK are increasingly moving away from building large superstores and are investing in convenience food stores and middle sized supermarkets (Hunt, 1997). Moreover, 73.2% of the consumers consider supermarkets as the retail channel providing the best overall experience for food shopping (Orgel, 1997). The trend of the middle sized supermarkets holds true for most European countries with supermarket as the main shopping destination in most of Europe, except in France, Portugal and Greece (The European, April 6, 1998). Specifically, the Spanish trends in food retailing companies reveal the waxing fortunes of supermarkets and the wane of corner-shops and convenience shops (Pau and Navasmés, 1998).

Given this new trend, one would expect retailing companies to put their hopes for growth in supermarkets. Research findings reveal that the main reasons for choosing this format of food retailing are price (35.2%), location (19.7%), quality (18.8%) and variety (13.1 %) (Orgel, 1997). While price, quality and variety can be changed to deal with competitors' policies, the same cannot be said of location which, to all intents and purposes, represents a fixed one-time investment of a unique, unchangeable nature. Goldman (2000) was one of the first to identify consumers' "selective adoption" of supermarkets, whereby "consumers who regularly shop in supermarkets continue to purchase fresh food in traditional outlets"; these findings echo those of others showing continued retail diversity even where supermarkets have expanded most. In recent work in Vietnam, Cadilhon et al (2006) anticipate strong growth of supermarkets (from a

base of only 2%) but suggest that "policy makers should not promote the 'modernization' of food systems at the expense of traditional channels, which meet important consumer needs". Maruyama et al (2007) also see strong growth, but cite serious challenges for supermarkets in lowering their prices and enhancing their locational convenience, both of which are key factors for the great mass of consumers in Africa and Asia.

4. METHODOLOGY

4.1 Target Population

The target population of our study is the whole customer class of supermarket living in Dhaka city of Bangladesh.

4.2 Sampling Units

The sampling units are classified according to different supermarkets. Different supermarket such as Agora, Meena Bazar, Prince, Shwapno, Dhaka Bazar, Carrefamily and G-mart are primary sampling units.

4.3 Sampling Elements

An element is the object about which or from which the information is desired. The individual customer of different supermarkets is our sampling element.

4.4 Sampling Design and Data Collection

Basically, a sort of randomness is used in our study to collect primary data. Primary data are collected from different supermarket customers who utilize the markets. To collect data, we first built up a well structured questionnaire. A pilot survey was conducted for checking the appropriateness of the questionnaire. Afterwards, we collected data by using personal interview method. Students of BBA program of Bangladesh University of Business and Technology (BUBT) were involved in data collection (January 2012) as a part of their study. At first the investigator (i.e., students) were well trained up and then they collected different information about supermarket from 290 respondents who buy the products from different supermarkets such as Agora, Meena Bazar, Prince, Shwapno, Dhaka Bazar,Nandan, Carrefamily and G-mart in Dhaka city.

4.5 Analysis and Reporting

The statistical package for the social science (SPSS) windows version 17 and Microsoft office package Excel-2007 were used to analyze the data.

4.6 Limitations of the Study

There is no concrete list of customers belonging to the population; we collected data randomly in the beginning of a month in different locations of Dhaka city. We also used logistic regression to determine which factors are responsible for customer satisfaction of supermarket in Bangladesh.

5. Results and Discussions

Factors are responsible to select the type of shop: Customers decision on buying a product depend on many factors such as price, location, staff etiquettes, store cleanliness, availability of almost products, etc. From Table 1, we may conclude that out of 290 respondents 210 (72.41%) consider availability of all products is the main factor in selecting the type of shop and staff etiquettes has less impact to take a decision from where he/she shops.

TABLE 1

FACTORS RESPONSIBLE FOR SELECTING THE TYPE OF SHOP

Sl. No	Factors	Responses	
		Frequency	Percent
1	Atmospherics	95	32.76
2	Price	105	36.21
3	Location	116	40.00
4	Distance	92	31.72
5	Availability of Imported products	103	35.52
6	Staff etiquettes	29	10.00
7	Cleanliness of store	68	23.45
8	Availability of almost products	210	72.41

Source: Sample Survey, January 2012.

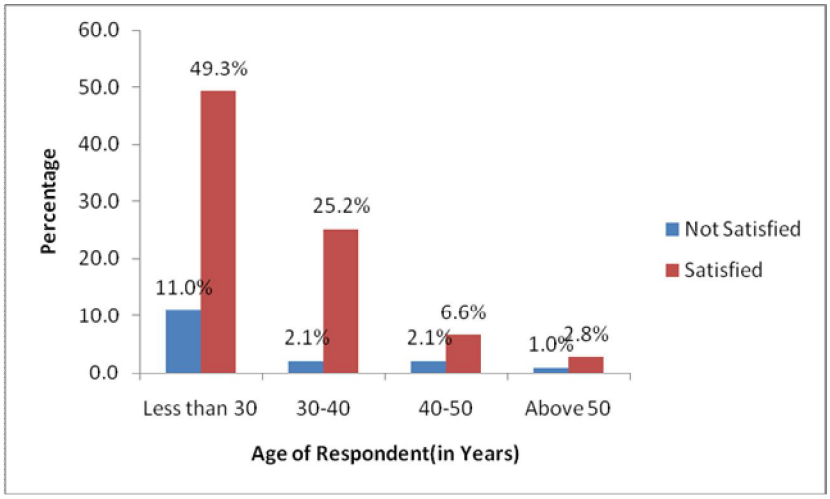
TABLE 2
REASONS TO GO FOR SUPERMARKET

Sl. No	Reasons	Responses	
		No. of Response	Percent
1	For economizing on shopping time	133	45.86
2	For avoiding bargaining	131	45.17
3	Almost all product are available in one place	155	53.45
4	Comfortable shopping environment	121	41.72
5	Status- symbol related	32	11.03
6	Product price is reasonable	30	10.34
7	Quality product fresh & good	72	24.83
8	Fixed price	122	42.07
9	Child care zone	39	13.45
10	Credit/debit card facility	68	23.45

Source: Sample Survey, January 2012.

Reasons to go for supermarket: Table 2 represents the reasons for going for Supermarket. From these results, we can conclude that out of 290 respondents 155 (53.45%) respondents go to supermarket for the simple reason that almost available in a small area. Also, we observe that economizing on time is the main reason for going Supermarket. This indicates that people have a tendency to spend less time on shopping. In supermarkets, the price of the products is fixed i.e., there is no chance of bargaining. For these reasons customers also prefer supermarkets.

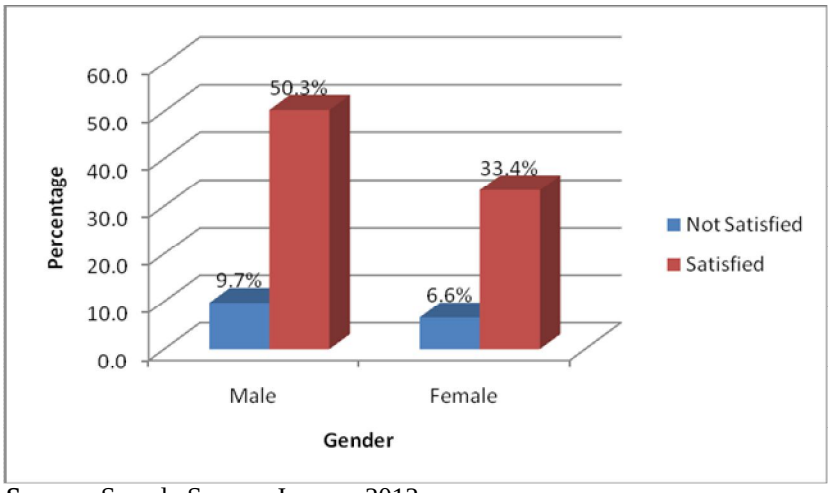
FIGURE 1: **Satisfaction on Shopping in Supermarket by Age of the Respondents**



Source: Sample Survey, January 2012

Satisfaction on shopping in supermarket by age of the respondent: It has been observed that out of 290 respondent 243 (83.8%) respondents are satisfied with shopping in supermarkets. Among 290 respondents, 49.3% respondents' age is less than 30 years who are satisfied with shopping in supermarkets. Also, 25.2% of the respondents' age is between 30-40 years those who are satisfied with shopping in Supermarket. These results indicate that young people prefer supermarkets than old people (Figure 1).

FIGURE 2: **Satisfaction on Shopping in Supermarket by Gender of the Respondents**

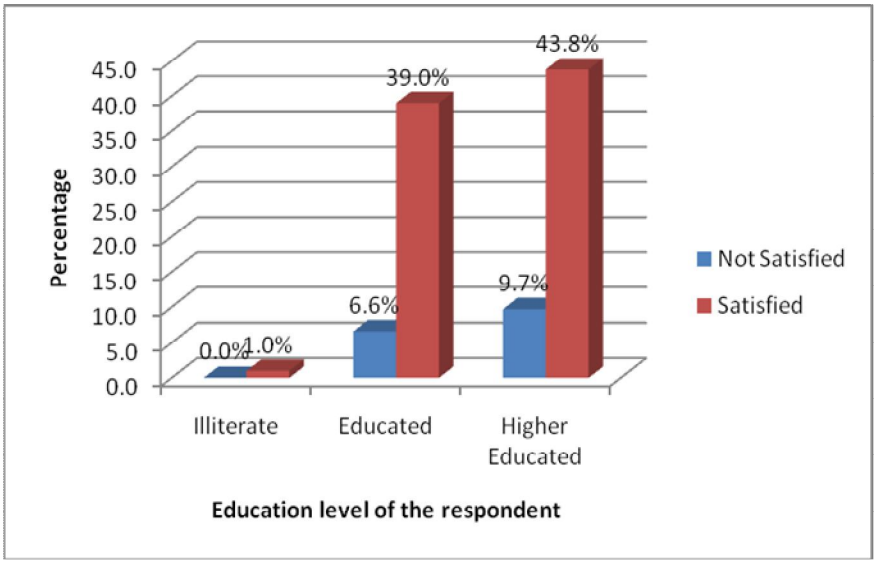


Source: Sample Survey, January 2012

Satisfaction on shopping in supermarket by gender of the respondent

Figure 2, presents the level of satisfaction on shopping in supermarket scenario according to gender of the respondents. We have found that among 290 respondents 174 (60.0%) respondents are male and 116 (40.0%) are female. Among 290 respondents 50.3% male respondents are satisfied with shopping in supermarkets. On the other hand, among 290 respondents 33.4% respondents are satisfied with shopping in supermarkets.

FIGURE 3: **Satisfaction on Shopping in Supermarket by Education Level of the Respondents**

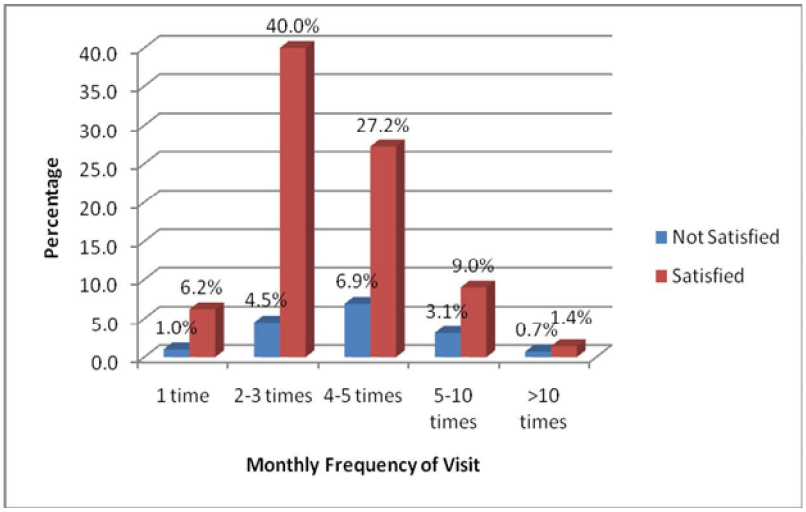


Source: Sample Survey, January 2012.

Satisfaction on shopping in supermarket by education level of the respondent

From the results of Figure 3, we can conclude that among 290 respondents 39% educated respondents are satisfied with shopping in supermarkets. Also, among 290 respondents 43.8% higher educated respondents are satisfied with shopping in supermarkets. These results indicate that educated people prefer supermarkets.

FIGURE 4: **Satisfaction on Shopping in Supermarket by Monthly Frequency of Visits to Supermarkets by the Respondents**

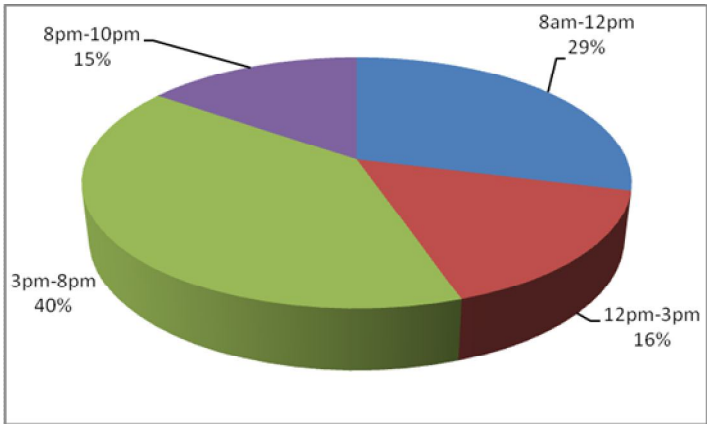


Source: Sample Survey, January 2012

Satisfaction on shopping in supermarket by monthly frequency of visits to Super Market of the respondent

From Figure 4 we observe that most of the people go to supermarkets two to five times in a month. Among 290 respondents 116 (40%) respondents go to supermarket two to three times in a month and 79 (27.2%) respondents go to supermarkets four to five times in a month.

FIGURE 5: **Preferred Time for Shopping in Supermarket**

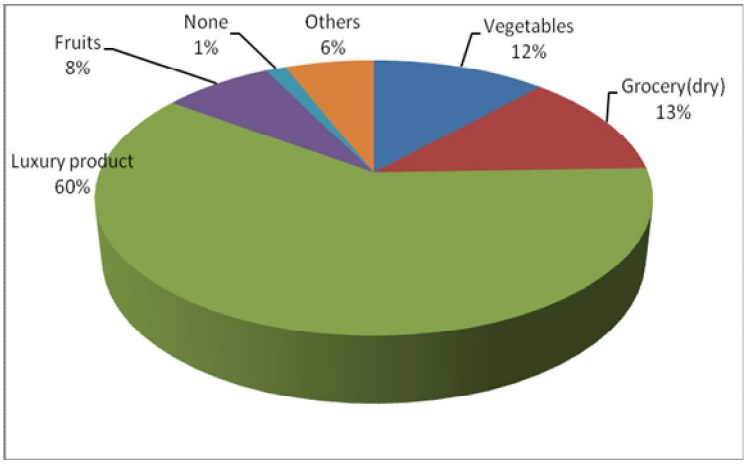


Source: Sample Survey, January 2012

Time to go to Supermarket

Now-a- days, people are busy with different activities. Shopping is an essential activity in our daily life. We know that people are busy for office, business etc, before 4 pm. Normally, people who are employees in different organizations go for shopping after 4 or 5 pm in our country. Our study also indicates that among 290 people 116 (40%) people prefer to shop between 3 pm to 8 pm (Figure 5).

FIGURE 6: **High Price of Products by Broad Categories in Supermarket**



Source: Sample Survey, January 2012

Price of the product in supermarket

From Figure 6 we can conclude that out of 290 respondents 175 i.e., 60.3% respondents say that those prices of luxury-products are higher in supermarkets. Only 4 (1.4%) respondents say that all the products available in supermarkets are not high compared to other markets. Most of the respondents in our study say that some of the products' price is higher in supermarkets, in spite of higher price of products people go for shopping in supermarkets because other benefits outweigh the price disadvantage.

Logistic Regression

In order to estimate the satisfaction level of a customer of a Supermarket, we consider a multiple logistic regression model which takes up the satisfaction level as the dependent variable and customer's age, sex, education level, monthly household income and monthly household expenditure, monthly frequency of visits to supermarkets, availability of all consumer products, prices of products as independent variables. The reason behind the use of logistic regression model is

that the outcome dependent variable – satisfaction status is dichotomous in nature. The logistic regression model can be used not only to identify risk factors but also to predict the probability of success. This model expresses a qualitative dependent variable as a function of several independent variables – both qualitative and quantitative (Fox, 1984).

Let Y_i denote the dichotomous outcome (dependent) variable for the i-th observation and $Y_i = y_i = 1$, if the i-th individual is a success with regard (supermarket) satisfaction

$= 0$, if the i-th individual is a failure

In terms of simple notation, we use the quantity $\pi(X) = E(y_i|X)$ to represent the conditional mean of Y given X when the logistic distribution is used. The model for estimating customers-response by using the logistic function is given by

$$\pi(X_i) = \frac{e^{\beta_0+\beta_i X_i}}{1+e^{\beta_0+\beta_i X_i}} \tag{1}$$

where, X_i is an explanatory variable and β_i's are the regression coefficients.

$$\therefore E(y_i = 1|X_i) = \pi(X_i) = \frac{e^{\beta_0+\beta_i X_i}}{1+e^{\beta_0+\beta_i X_i}} \tag{2}$$

and

$$E(y_i = 0|X_i) = 1-\pi(X_i) = \frac{1}{1+e^{\beta_0+\beta_i X_i}} \tag{3}$$

Therefore, we can write

$$\frac{\pi(X_i)}{1-\pi(X_i)} = e^{\beta_0+\beta_i X_i} \tag{4}$$

Now if we take natural logarithm of the equation (4), we get

$$L_i = \log_e\left[\frac{\pi(X_i)}{1-\pi(X_i)}\right] = \beta_0 + \beta_i X_i \tag{5}$$

The equation (5) is known as simple logit regression model. Here $\frac{\pi(X_i)}{1-\pi(X_i)}$ given in (4) is simply the odds ratio and the term L_i given in (5) is known as log-odds.

TABLE 3
MODEL FITTING INFORMATION

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	Degrees of freedom	Significance level
Final	177.901	61.041	25	.000

On the basis of the results of -2 Log Likelihood and Likelihood Ratio Tests given in Table 3, we observe that the model is well- fitted. The results of the logistic regression model are shown in Table 4.

TABLE 4
DETERMINANTS OF SATISFACTION ON SUPERMARKET SHOPPING: LOGISTIC REGRESSION ANALYSIS

Variables	B	Std. Error	Wald	Exp(B)	95% Confidence Interval for Exp(B)	
					Lower Bound	Upper Bound
Intercept	-2.701	1.675	2.599			
Age (in Years)						
≤ 30 RC *	0	-	-	1	-	-
30-40	.817	.901	.821	2.263	.387	13.242
40-50	1.803	.979	3.389	6.067	.890	41.365
50+	.745	1.006	.548	2.106	.293	15.139
Education						
Illiterate RC	0	-	-	1	-	-
Educated **	17.296	.000	.	3.249E7	3.249E7	3.249E7
Higher educated ***	-.263	.432	.370	.769	.330	1.792

Cont. Table 4

Variables	B	Std. Error	Wald	Exp(B)	95% Confidence Interval for Exp(B)	
					Lower Bound	Upper Bound
Monthly Income (in Tk.)						
10,000[RC]	0	-	-	1	-	-
10,000-20,000	1.942	2.143	.822	.143	.002	9.557
20,000-30,000	1.385	1.189	1.357	.250	.024	2.574
30000+	2.046	.859	5.669	.129	.024	.696
Monthly Expenditure (in Tk.)						
≤ 10000 [RC]	0	-	-	1	-	-
10000-20000	2.373	1.643	2.086	10.729	.429	268.532
20000-30000	2.057	.974	4.460	7.819	1.160	52.728
30000+	1.339	.819	2.674	3.815	.767	18.981
Gender						
Female [RC]	0	-	-	1	-	-
Male	.190	.410	.214	1.209	.541	2.702
Available all products						
Undecided [RC]	0	-	-	1	-	-
Do not agree	-.252	.837	.090	.778	.151	4.013
Agree	.310	.482	.415	1.364	.531	3.506
Monthly frequency of visit to supermarkets						
1 [RC]	0	-	-	1	-	-
2-3	2.350	1.473	2.545	10.489	.584	188.305
4-5	2.846	1.323	4.627	17.219	1.288	230.271
5-10	1.585	1.285	1.522	4.881	.393	60.578
10+	1.302	1.295	1.011	3.677	.290	46.532
Supermarket made life easy						
No [RC]	0	-	-	1	-	-
Yes	.856	.545	2.466	2.354	.809	6.851

Cont. Table 4

Variables	B	Std. Error	Wald	Exp(B)	95% Confidence Interval for Exp(B)	
					Lower Bound	Upper Bound
Price of the product is high						
Undecided [RC]	0	-	-	1	-	-
Do not agree	.572	.876	.426	1.771	.318	9.858
Agree	-.597	.553	1.167	.550	.186	1.626

Notes:*RC means Reference Category
** Educated means schooling years 3 to 12
***Higher educated means schooling years 13 and above

From Table 4, we may conclude that age has positive impact on satisfaction status of shopping from supermarkets. One of the reasons behind that is now the people don't like bargaining. They think that through bargaining they are able to give fewer amount to buy a product. We observe that educated people are satisfied with the performance of supermarkets, but higher educated people are not satisfied with the performance of supermarkets in our study. Income level is an important factor to measure the level of satisfaction on supermarkets. It has positive impact on satisfaction level. Expenditure is also another factor to measure the level of satisfaction on supermarkets. Gender (male) of the respondents is positively related to the dependent variable. Availability of all products in supermarkets improves the satisfaction level. Table 4 also indicates that satisfaction on supermarkets also depend on how many times a customer goes to supermarkets in a month. We observe that among the customers of supermarkets those who go to supermarkets two to five times in a month are more satisfied than those who go to supermarkets more than five times in a month. This means that if the frequency of visits to supermarket decreases, the satisfaction level also decreases. Hence we may conclude that supermarkets make life easy, which is positively related to the satisfaction on supermarkets. We may also conclude that the high prices of the products result decrease in the satisfaction level on supermarkets. On the other hand, reasonable price of the product of supermarkets increases the level of satisfaction with regard to supermarkets.

6. CONCLUSIONS

It is impossible to give a limit to satisfaction level within a boundary. Level of satisfaction differs from person to person, as no two human beings are identical. But there are some common factors which can determine the overall level of satisfaction of the customers of supermarkets. Being satisfied with supermarkets means a customer's positive attitude towards the supermarket from where he or she is shopping. If one is satisfied by shopping from his/her supermarkets, he/she will shop more from supermarket to achieve maximum satisfaction on supermarkets. Satisfaction on supermarket of individuals may be high or low. This dimension of satisfaction on supermarket depends on the different elements such as age, gender, education level, income and expenditure, number of monthly visits to Supermarket, availability of (almost) all necessary products and price of the products etc. If most of the customers are not satisfied in shopping with, it indicates that the supermarket is not serving its purpose to the customer.

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APPENDIX

Sample Size Determination

To determine sample size we use the following formula:

$$n = \frac{z^2 pq}{d^2}$$

where $n =$ the desired sample size,

$z =$ the standard normal deviate, 1.96 which corresponds to the 95% confidence level,

$p =$ the proportion in the target population estimated to have a particular characteristic,

$q = 1 - p$,

$d =$ degree of accuracy desired (precision level of the estimate).

p for different characteristics is different - ranging from 0 to 1. In the absence of prior knowledge we take, $p = 0.5$.

$d = 0.0575,\ \mathrm{z} = 1.96,\ p = 0.5,\ q = 1 - 0.5 = 0.5$.

$p = 0.5$ would yield maximum sample size and thus ensure efficient estimates.

$$n = \frac{(1.96^2)(0.5)(0.5)}{(.0575^2)} = 290.48 \approx 290.$$