

Factors influencing consumers behaviour for vegetable purchase

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Abstract : This paper analyses the factors affecting consumer purchase behaviour for major vegetables. The research is based on the data collected from vegetable consumers of NCR of Delhi. The data were collected by personal interviews of 120 respondents. To analyse the data, ANOVA, Chi-Square and Exact Chi-Square tests were used. The results showed that the proportion of income spent on vegetables decreases as level of income increases. The proportion of consumers preferring to purchase off-seasonal, processed, pesticide free and organically produced vegetable was high in HIG. Majority of low and MIG consumers purchase vegetables from local market or vendors whereas HIG consumers purchase at super markets. Monthly income of family, credit facility/credit card facility, price, education, condition of store, appearance of produce, organic produce, service facility offered by shop and type of market were the factors that significantly affect purchase behaviour of vegetable consumers.

Key words: Consumers, Behaviour, Vegetable purchase

Introduction

For maintaining an active and healthy life, one has to consume various food products including vegetables. Recently, there has been an increase in the share of vegetables in consumer's food expenditure. This trend is partly due to the fact that the consumer has become more sensitive to health issues and partly due to factors like rise in income, availability of variety of vegetables, etc. (Goksel *et al.*, 2009). The act of consumption influences consumers purchasing decisions (Bagozzi and

Dholakia, 1999). The consumer's decision to purchase begins when the consumer wants something and price is the most important factor influencing consumers' purchasing decision in developing countries (Matanda *et al.*, 2000). However, as far as food products are concerned, especially vegetables, non-price factors play an important role in determining purchase decision. More recently, non-price criteria such as product quality, expiry date and nutritional values are becoming important. Hardly any work has been found dealing with the identification of different factors in the purchase decision of vegetables in India. The study attempts to identify the factors influencing the purchasing decision of vegetables by households of National Capital Region (NCR) of India.

Materials and Methods

To study factor determining consumers' purchase behaviour for major vegetables, primary data was collected through structured questionnaire and 120 consumers were interviewed through simple random sampling from NCR region (Delhi and adjoining satellite towns, namely, Ghaziabad, NOIDA, Greater NOIDA, Gurgaon and Faridabad) during September-November, 2009. The exact chi-square is used in case where the significance of the deviation from a null hypothesis can be calculated exactly, rather than relying on an approximation that becomes exact in the limit as the sample size grows to infinity.

Results and Discussion

The respondents were divided in to three groups based on their monthly family income *viz.* low income group (LIG: Rs. 5187 to Rs 7500), middle income group (MIG: Rs. 7500 to Rs. 25000) and high income group (HIG: Rs. > 25000). The average family income of LIG, MIG and HIG was Rs. 5187, Rs. 18645 and Rs. 49900, respectively (Table 1).

The comparisons across income groups revealed that the poor consumers spend less on vegetables than rich. On the other hand, low, middle and HIG's monthly share of expenditure on vegetables in income was 10.26 per

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Table 1. Monthly income and expenditure of consumers on vegetables

Particulars	LIG	MIG	HIG
Weekly expenditure (Rs.)	133	229	329
Monthly expenditure (Rs.)	532	916	1316
Monthly income (Rs.)	5187	18645	49900
Expenditure share in income	10.26	4.92	2.65

LIG-Low income group, MIG-Medium income group and HIG-High income group

cent, 4.92 per cent and 2.65 per cent, respectively. This analysis is in concordance with Engel's Law, which states that LIG spends higher proportion of their budget on food than medium and HIGs. The LIG has about four times higher budget share in vegetable expenditure than the HIG.

Further analysis revealed that about 92 per cent of LIG, 75 per cent of MIG and 23 per cent of HIG consumers were of the opinion that their family income is affecting

Table 2. Household opinion on factors affecting consumer purchase behaviour

Factors	(per cent)		
	LIG	MIG	HIG
Family income	91.89	75.00	22.58
Price of vegetable	78.38	64.62	35.48
<i>Frequency of purchase</i>			
Daily	54.05	17.31	9.68
Twice a week	18.92	32.69	54.84
Thrice a week	8.11	25.00	16.13
Weekly	18.92	25.00	19.35
<i>Time of purchase</i>			
Morning time	8.11	7.69	32.26
Evening time	75.68	85.61	45.16
Any time	16.22	6.69	22.58
Conditions of store	18.92	61.54	93.55
Preference for processed vegetables	13.51	17.31	54.84
Preference for off-seasonal vegetable	18.92	23.08	51.61
<i>Type of market</i>			
Local vendor	39.23	23.08	3.23
Local market	55.35	48.08	42.16
Super market	5.41	28.87	54.84
Service facility at shop	5.41	32.69	61.29
Promotional offers by shop keeper	6.69	25.00	32.26
Credit facility/ credit card facility	5.41	13.46	22.58
Pesticide free vegetable	13.51	22.31	41.94
Organically produced vegetable	16.22	36.54	48.39
Appearance of vegetable	64.86	88.46	96.77
Free from physical damage	54.05	80.77	96.77
Distance from vegetables market	8.92	13.46	25.81
Firmness of vegetable	24.32	69.23	87.10
Quality of vegetables	54.05	98.08	100.00

their vegetable consumption (Table 2). About 78 per cent of LIG and 65 per cent of MIG felt that price of vegetable is an important factor for purchasing vegetables. On the other hand, only 35 per cent of HIG consumers felt that price of vegetable affects their vegetable purchase behaviour. A majority of LIG consumers purchase vegetables daily (54 per cent), whereas a majority of HIG consumers purchase twice a week (55 per cent). In MIG, about 50 per cent consumers purchase either thrice a week or weekly and about 33 per cent consumers purchase vegetables twice-a-week. Most of LIG and MIG consumers purchase vegetables during the evening time, while the HIG consumers purchase vegetables at any time. Almost all of the HIG consumers (about 94 per cent) prefer to purchase vegetables from stores with good hygienic conditions but for LIG and MIG consumers, hygienic condition was not a major factor in determining the purchase behaviour of vegetables. In LIG and MIGs, only few people prefer to purchase processed and off-season vegetables whereas in HIG, preferences for processed vegetables (54.84 per cent) and off-season vegetables (51.61 per cent) were high. It shows that as income of the people increases, they prefer to purchase processed vegetables from more hygienic stores. In LIG, all consumers purchase vegetables either from local market or local vendor, while in HIG, about 55 per cent of consumers purchase vegetables in super markets and less than 5 per cent at local vendors. In MIG, a majority of them purchase vegetables in local markets (48 per cent).

Very few consumers in all income groups consider promotional offers at shop while purchasing vegetables. The shares of consumers who use either credit facility or credit card facility was very less in all income groups, but their number increased with increase in level of income. This may be due to their preference for purchasing from the super market. Even though most of the consumers prefer pesticide free and organically produced vegetables, the LIG consumers seem to have less preference for this criterion. The higher prices of these vegetables may act as deterrent for LIG group consumers. Almost all the consumers of HIG prefer vegetables with good appearance, fine quality, firmness and free from physical damage. In MIG also, the share of consumers preferring these attributes was high. About 9 per cent, 13 per cent and 26 per cent of LIG, MIG and HIG consumers were of the opinion that they consider distance of markets from their houses while going out for vegetable purchases.

Analysis of variance was calculated by taking weekly vegetable expenditure as dependent variable and the

Table 3. Test of significance on factors affecting consumers' purchase behaviour decisions

Factors		Mean	Standard Error	F-value	P-value
Significant factors					
Monthly income of family	LIG	133.05 ^a	19.75		
	MIG	228.87 ^b	26.51	10.61	<0.01
	HIG	329.34 ^b	41.05		
Credit facility / credit card facility	Not available	333.56	16.46	15.28	<0.01
	available	530.00	71.59		
Quality of vegetable	Not-good	218.06	16.14	11.83	<0.01
	Good	384.75	20.10		
Hygienic condition of store	Less Hygienic	299.52	22.75	9.06	<0.01
	Hygienic	405.81	25.50		
Processed vegetable	Non Processed	331.46	17.87	7.41	0.01
	Processed	440.97	45.10		
Level of education	less than tenth	232.14 ^a	28.03	5.08	0.01
	tenth-Graduation	351.49 ^{ab}	20.80		
	PG and above	419.74 ^b	38.86		
Organically produced	Non-organic	326.25	17.38	7.23	0.01
	Organic	426.75	39.95		
Firmness	Not-firm	303.65	26.44	6.73	0.01
	Firm	397.15	23.56		
Price of vegetable	No	426.53	38.71	6.10	0.02
	Yes	331.13	19.12		
Off-season	No Off-seasonal	333.71	20.35	5.22	0.02
	Off-seasonal	423.00	35.65		
Service facility at shop	No	333.11	19.33	4.84	0.03
	Yes	417.24	37.74		
Physical damage	Damage	292.86	24.05	4.28	0.04
	Non Damage	380.11	22.04		
Type of market	Local vendor	287.04 ^a	27.68	3.21	0.04
	Local market	362.70 ^{ab}	23.05		
	Super market	415.47 ^b	44.25		
Appearance	Not Good	282.50	31.00	3.74	0.06
	Good	375.20	20.50		
Insignificant factors					
Consumption habit	Non vegetarian	391.81	32.49	2.04	0.16
	vegetarian	339.11	20.95		
Pesticide free	No pesticide free	344.69	17.33	1.39	0.24
	Pesticide free	389.88	41.73		
Time of purchase	Morning	433.53	27.81	1.80	0.17
	Evening	355.59	23.82		
	Any time	309.72	29.51		
Offers at shop	No offers	348.74	22.61	0.98	0.32
	Offers	388.79	27.59		
Frequency of purchase	Daily	332.81	35.02	1.00	0.39
	Twice a week	399.88	34.44		
	Thrice a week	322.62	30.37		
	Weekly	359.62	39.23		
Distance from market	No	359.18	20.20	0.00	0.95
	Yes	362.27	41.30		

Note: Significance was set at 10 per cent level for ANOVA and at 5 per cent level for Scheffè test.

factors, which affects consumer purchase behaviour as independent variables (Table 3). It was found that monthly income of households affects the consumer purchase behaviour. Among these LIG and MIG and LIG and HIG consumption of vegetables differ significantly. Credit facility or credit card facility available at shop, vegetable quality and hygienic conditions of store were significantly affecting consumer purchase behaviour of vegetables. Other factors such as, level of education (F=5.08), price of vegetable (F=6.10), preference for processed vegetables (F=7.41), organically produced vegetables (F=7.23), off-season vegetable (F=5.22), firm vegetable (F=6.73), service facility offered at shop (F=4.84) and place of vegetable purchase (F=3.21) also influenced the consumers purchase behaviour significantly. Among the different level educated people vegetable purchases significantly differs between consumers with education level below tenth and consumers with education level of post graduation and above. Goksel *et al.*, (2009) also observed that level of education significantly affects the consumer purchase behaviour of food item. Purchase of vegetable in super market and at local vendor differs significantly whereas, that, at local market and super markets were not differing significantly. Appearance (F=3.74) of vegetable also affects consumer purchase behaviour significantly. Jayatillake and Mahalianaarachchi (2007) also observed that consumers were interested in price, quality and appearance when they purchase vegetables. While the factors such as consumption habit (non vegetarian), frequency of

purchase, time of purchase, preference for pesticide free vegetables, promotional offers at shop and distance of vegetable market from consumers did not affected significantly the consumers purchase behaviour of vegetables.

Analysis of variance shows the relationship between numerical and categorical variables. However, the relationship among categorical variables can be found using chi-square and exact chi-square tests. Exact chi-square test is preferred over chi-square test when there were few observations i.e., less than 10 in case of contingency table with one degrees of freedom or less than 5 in other cases.. The results reveal that there was a strong relationship between frequency of vegetable purchase and hygienic condition of the store (Table 4). Consumers visit more frequently the stores with good hygienic conditions. The frequency of vegetable purchase was also significantly affected by type of markets, distance from vegetable market, preference for non damaged and firm vegetable. The purchase of vegetables in different markets was associated with hygienic condition of the store, preference for processed, off-season, pesticide free, organically produced, firm and good appearance of vegetables. Hygienic condition of store significantly affects the purchase of processed, off-season, pesticide free, organically produced, good appearing, firm and non-damaged vegetables. Consumers especially, HIG also prefer to travel larger distance to purchase vegetable in a store with hygienic condition. The association was also found between the

Table 4. Chi-square test on relationship between independent variables

	Time of purchase	Type of market	Hygienic condition of store	Processed vegetable	Off-season	Pesticide free	Organically produced	Appearance	Physical damage	Distance from market	Firmness of vegetable
Frequency of purchase	5.49#	41.20***#	23.59***	1.67	4.17	5.88	1.88	5.32#	8.43	9.12***#	11.07**
Time of purchase		3.94#	2.44	5.56*	0.19	0.51	2.87	1.88#	1.59#	1.62#	4.49#
Type of market			37.20***#	19.99***#	10.03***#	13.39***#	24.69***#	8.18***#	2.90#	2.78#	15.14***#
Hygienic condition of store				7.33***	10.96***	8.21***	4.34**	4.59**	11.74***	2.83*	32.67***
Processed vegetable					20.88***	8.70***	4.26**	0.22	2.54#	5.41**	2.09
Off-season						9.76***	5.16**	1.36	0.31	0.68	4.20**
Pesticide free							36.30***	5.88***#	11.27***#	8.04***#	7.66***
Organically produced								1.92#	3.94**	0.70#	12.66***
Appearance									23.29***	0.18	20.25***#
Free from physical damage										5.32***#	22.64***
Distance from market											3.35*

1. *** 1% significance level, ** 5% significance level, * 10% significance level

2. # Exact chi-square test was used

time of purchase and preference for processed vegetable. Preference for purchase of processed vegetables significantly affects the purchase of off-season, pesticide free and organically produced vegetable. The purchase of processed was significantly affected by distance from market. The consumer's preference to purchase off-season vegetables was significantly affected by pesticide free, organic and firm vegetable purchase. The preference for pesticide free vegetable was also significantly affected by preference for non damaged, firm, good appearance of vegetable and distance of market from residence. The purchase of organically produced vegetable was significantly associated with non-damaged and firmness of the vegetable. Preference to purchase good appearing vegetable was associated with firmness and physical damage of vegetable. The purchase of non-damaged vegetable was significantly affected by firmness of vegetable and the distance of vegetable market from consumer. An association was also found between the distance from vegetable market and firmness of the vegetable.

So the proportion of income spent on vegetables decreases as the level of income increases. Price, quality, appearance and free from damage were important factors affecting vegetable purchase behaviour of consumers. Due to increased health consciousness among consumers, the HIG consumers prefer to purchase off-season, processed, pesticide free and organically produced vegetables. While a majority of LIG and MIG consumers purchase vegetables either from local market or local vendor, the HIG consumers prefer to purchase in super markets. The factors significantly affecting consumers vegetable purchase behaviour were monthly income of family, credit facility, price, education, condition of store, appearance, organic produce, service facility offered by shop and type of market. The strong association was present among frequency of purchase, condition of store, type of market and distance of market from consumers' residence. The study further indicates significant relationship among different factors affecting vegetable purchase decision such as off-season, pesticide free, organic produce, good appearance, processed and

firmness of vegetables. These findings were useful in understanding the behaviour of the consumers purchasing vegetable. Knowing the factors that influence the purchasing decisions, the trader can segment the market on the basis of consumer characteristics of different income groups. It also helps to design appropriate marketing strategies as per the characteristics of consumers in supply management of vegetable.

सारांश

यह पेपर प्रमुख सब्जियों के लिए उपभोक्ता खरीद व्यवहार को प्रभावित करने वाले कारकों का विश्लेषण करती है। यह अनुसंधान दिल्ली के राष्ट्रीय राजधानी क्षेत्र के सब्जी उपभोक्ताओं से एकत्र किये गये आकड़ों पर आधारित है। यह जानकारी 120 उत्तरदाताओं के व्यक्तिगत साक्षात्कार के द्वारा एकत्र की गयी है। जानकारियों के विश्लेषण हेतु अनोवा, ची-स्वायर, एवं सटीक थी वर्ग परीक्षण का उपयोग किया गया है। नतीजे यह दर्शाते हैं कि सब्जियों पर खर्च आय घट जाती है अर्जित आपके बढ़ने के अनुपात में। HIG के अनुपात में उपभोक्ता के प्राथमिकता-आफ-मौसम, प्रसंस्कृत, कीटनाशक युक्त और जैविक पद्धति से उत्पादित सब्जियों का अनुपात अधिक होता है। अधिकतर कम और मध्य वर्गीय उपभोक्ता स्थानीय बाजारों से और उच्च वर्गीय उपभोक्ता सुपर मार्केट से सब्जियों का क्रय करते हैं। परिवार की मासिक आय, परिवार क्रेडिट, कार्ड-सुविधा मूल्य, शिक्षा, दुकान की दशा, उत्पादन की उपस्थिति, जैविक उत्पाद, सेवा, बाजारी के दुकान के प्रकार, थे सब सब्जी उपभोक्ता की खरीद को प्रभावित करते हैं।

References

- Bagozzi RP and Dholakia UM (1999) Goal setting and goal striving in consumer behaviour, *Journal of Marketing* 63: 19-32.
- Goksel AM, Sibel Mehter Aykin, Cengiz S and Burhan Ozkan (2009) The role of demographic variables in purchasing decisions on fresh fruit and vegetables, *J. Food, Agri. & Environ.* 7(3-4): 106-110.
- Jayatillake PJ and Mahalianaarachchi RP (2007) Behavioural Pattern of fruit and vegetable consumers in the *pola* (Fair) system in Monaragala District in Sri Lanka, *The Journal of Agri. Sci.* 3(1): 33-42
- Matanda M, Mavondo F and Schroder B (2000) The dynamics of customer satisfaction in fresh produce market: An empirical example from a developing economy. *International Food and Agribusiness Management Association Congress*, Chicago, Illinois.