

RESEARCH PAPER

An analysis on factors influencing consumption of imported fruits in Bengaluru city

■ Azizul Rahman Ragashtai and Parisa Aqdas Karimi

Received : 01.09.2018; Revised : 04.03.2019; Accepted : 19.03.2019

ABSTRACT

Fruits are indispensable to human diet. India is importing different types of fruits from different parts of the world. The study was conducted with the objective to assess the factors influencing consumption of imported fruits. The study was conducted in Bengaluru city with a sample of 60 respondents. A vast majority (81.67 %) of consumers have clearly revealed that health, taste and quality were the major factors influencing the purchase of imported fruits in Bengaluru city followed by nutrients content, different varieties, recognizable branded product, trust to origin, seasonal products, attractive packaging, readily available, brand image and less price are other factors influencing the purchase of imported fruits in Bengaluru city. The State Agricultural Universities, including Horticultural Universities and Horticulture Departments need to focus on bringing improvement in local fruits in respect of quality, taste, colour and keeping quality to compete with the imported fruits so as to reduce dependence on imported fruits.

KEY WORDS : Factors influencing, Consumption, Imported fruits, Seasonal

How to cite this paper : Ragashtai, Azizul Rahman and Karimi, Parisa Aqdas (2019). An analysis on factors influencing consumption of imported fruits in Bengaluru city. *Internat. J. Com. & Bus. Manage.*, 12(1) : 8-12, DOI: 10.15740/HAS/IJCBM/12.1/8-12. Copyright@2019: Hind Agri-Horticultural Society.

Fruits are botanically diverse, perishable, seasonal, and regional commodities. They come in many forms, shapes and sizes, colours, flavours and textures. The fruit has always been a part of the human

diet and is an important nutritional source, with high water content (70 – 85 %) and a relatively high amount of carbohydrates but low contents of fat (less than 0.5 %) and protein (less than 3.5%) Clum *et al.* (2016) and Dimech *et al.* (2011).

In India traditionally, a vast majority of the population prefers to consume fresh fruits. The nutritional intake from fruits and vegetables is higher among urban population compared to the rural population. Along with the urbanization, people are likely to increase their calorie intake at a higher pace through fruits and vegetables. The increase in calorie intake is more than 10 per cent in the urban area whereas it is merely 1.89 per cent in a rural area over the period from 2004-05 to 2009-10. The

MEMBERS OF THE RESEARCH FORUM

Correspondence to:

Azizul Rahman Ragashtai, Department of Agricultural Marketing, Co-operation and Business Management, University of Agricultural Sciences, G.K.V.K. Campus, Bengaluru (Karnataka) India
E-mail: azizulrahmanbabai@gmail.com

Authors' affiliations:

Parisa Aqdas Karimi, Department of Agricultural Extension, University of Agricultural Sciences, G.K.V.K. Campus, Bengaluru (Karnataka) India

average consumption of fruits in India is only a quarter of the average in Europe and Australia. It is estimated that per capita fruits availability in the country is 230 gms per capita per day.

The factors such as income, aging of a population, market promotion and consumer awareness about the importance of fruit, year-round availability of fruits have contributed to increased fresh fruit consumption. The consumption of fruit has also been increasing in the last years due to changes in consumer preferences and promotion campaigns by international organizations and governmental agencies.

The gains in consumption of fresh produce are associated with a number of institutional and economic factors. Consumer preferences have changed with rising incomes and consumers now demand a year-round supply of a greater variety of fresh produce. At the same time, international trade agreements, improvements in the marketing infrastructure of highly perishable goods and global cooperation among importers, handlers and distributors have enabled fresh fruit to be imported in greater quantities. Another factor is growing recognition that diets rich in fruit - good sources of vitamins, minerals, and fibre - are associated with reducing some chronic diseases and the rising problem of obesity. As evidence of the link between diet and health has grown, the health issues have increasingly influenced consumer preferences for fresh produce.

METHODOLOGY

The data collected for the study was processed and analyzed by using suitable statistical techniques. Percentage analysis and factors analysis were used for the primary data analyse. A detailed description of the analytical tools employed in the study is presented below.

Percentage analysis:

A percentage is a way of stating a number, particularly a ratio, as a fraction of 100. It is often indicated using the per cent sign per cent, or the abbreviations pct. The percentages are used to show how large/ small one quantity is relative to another quantity. The main quantity commonly represents a portion of or a conversion in the second quantity, which must be bigger than zero.

Factors analysis :

Factor analysis is a statistical method used to define variability between observed correlated variables in terms of potentially lower number of unobserved variables called factors. Factor analysis searches for joint variations in response to unobserved latent variables. The observed variables are modeled as linear combinations of the potential factors, plus error terms. The information gained about the interdependencies between observed variables can be used later to reduce the set of variables in a dataset.

Factor analysis model :

$$X_i = A_{i1}F_1 + A_{i2}F_2 + A_{i3}F_3 + \dots + A_{im}F_m + V_iU_i$$

where,

X_i = i^{th} standardized variable

A_{ij} = Standardized multiple regression co-efficient of the variable on common factor j

F = Common factor

V_i = Standardized regression co-efficient of variable i on the unique factor

U_i = Unique factor for variable i

m = number of common factors

The unique factors are uncorrelated with each other and with common factors. The common factors themselves can be a linear combination of the observed variables.

$$F_i = W_{i1}X_1 + W_{i2}X_2 + W_{i3}X_3 + \dots + W_{ik}X_k$$

Where,

F_i = Estimate of the i^{th} factor

W_{ij} = Weight or score of the co-efficient

k = Number of variables

It is possible to select weight or factor score co-efficient so that the first factor explains the major portion of the over-all variance. Then, the second set of weights can be selected so that the second factor accounts for most of the variance subject to being uncorrelated with the first factor. The same standard can be useful for selecting additional weights for the additional factors.

Terminology in factor analysis:

Bartlett's test of sphericity:

It is a statistic test for examine the hypothesis for showing that the variables are uncorrelated in the population *i.e.*, the population correlation matrix is an identity matrix. Bartlett's test of sphericity tests the hypothesis that a correlation matrix is an identity matrix,

which would indicate that the variables are unrelated and, therefore, unsuitable for structure detection. Each variable correlates perfectly with itself ($r=1$) but has no correlation with the other variables ($r=0$).

Correlation matrix:

A correlation matrix is a table showing correlation co-efficients between sets of variables. Each random variable in the table is correlated with each of the other values in the table. This allows seeing which pairs have the highest correlation. It is a lower triangle matrix showing the simple correlation r , among all possible pairs of variable involved in the analysis. The diagonal elements which are all 1 are usually omitted.

Factor scores:

The factor scores are compound scores assessed for each respondent on the deriving factors.

Factor loadings:

Factor loadings are co-efficients found in either a factor pattern matrix or a factor structure matrix. Factor loadings help in labelling and interpreting the factors. It measures that how closely the variables in the factor are associated. Furthermore it is calling factor variable correlation. These are the correlation co-efficients between the variables and the factors.

Eigen value:

Eigen values are the variances of the factors. They measure the variance in all the variables similar to the factor. Furthermore Eigen values are calculated by adding the squares of factor loading of all the variables in the factor. It helps in explanation of the factor importance with respect to variables. Generally, factors with Eigen values more than one are considered stable. The factors that have low Eigen values (<1.0) may not explain the variance in the variables related to that factor.

Communalities:

Communalities measure the percentage of variance

in each variable clarified by the factors extracted. It is denoted by h^2 and ranges from 0 to 1. A high communality value indicates that the maximum amount of variance in the variable is explained by the factors extracted from the factor analysis.

Total variance explained:

It is the percentage of the total variance of the variables explained. This is calculated by adding all the communality values of each variable and dividing it by the number of variables.

Factor variance explained:

It is the percentage of total variance explained by the factors. It is added by calculated by adding the squared factor loadings of all the variables and dividing it by the number of variables.

ANALYSIS AND DISCUSSION

The findings of the present study as well as relevant discussion have been summarized under the following heads :

Level of satisfaction of consumers on the use of imported fruits in Bengaluru city:

The level of satisfaction of consumers on the use of imported fruits in Bengaluru city is presented in the Table 1. It could be observed from the table that, majority of the consumers are satisfied to use imported fruits because imported fruits are totally different from domestic fruits, with better quality, better shelf-life and variety. Further imported fruits are prefer by consumers from the point of health. The table reveals that Vast majority of consumers (81.67%) were satisfied. Further (11.67%) consumers were highly satisfied and only (6.67%) consumers were not satisfied, which is mainly related to high prices compared to local fruits.

Factors influencing the purchase of imported fruits in Bengaluru city:

Factor analysis was used to identify the factors

Table 1: Level of satisfaction of consumers on the use of imported fruits in Bengaluru city			(n=60)
Sr. No.	Level of satisfaction	Number	Percentage
1.	Satisfied	49	81.67
2.	Highly satisfied	7	11.67
3.	Not Satisfied	4	6.67
4.	Total	60	100.00

influencing the purchase of imported fruits in Bengaluru city. The first step in factor analysis is to check the adequacy of data with the help of Kaiser-Meyer-Olkin (KMO) Measure and Bartlett's test (Table 2). The KMO measure was found to be 0.621 which shows that the factors that are extracted will account for fair amount of variance. The overall significance of correlation matrix was tested with Bartlett's test of Sphericity. The chi-square value for Bartlett's test was significant, thus, rejecting the null hypothesis of independence among the variables.

Eigen values greater than one were considered for determining the number of factors influencing the purchase of imported fruits in Bengaluru city. With the help of Cattell's scree plot the factors were determined. Four factors had Eigen values greater than one, thus, these factors were considered.

The rotated factor matrix for factors influencing the purchase of imported fruits in Bengaluru city is presented in the Table 3. It can be observed from the table that "health", "taste", "quality" and "nutrients content" were substantially loaded on factor 1, while "more variety availability", "recognizable branded

product", "more trust to origin" and "more seasonal products" were significantly loaded on factor 2. "Attractive packaging", "readily available" and "brand image" were loaded on factor 3. "Low price" was loaded on factor 4.

Thus, it can be inferred from table that factor 1 labelled as "taste and health", with variables like health,

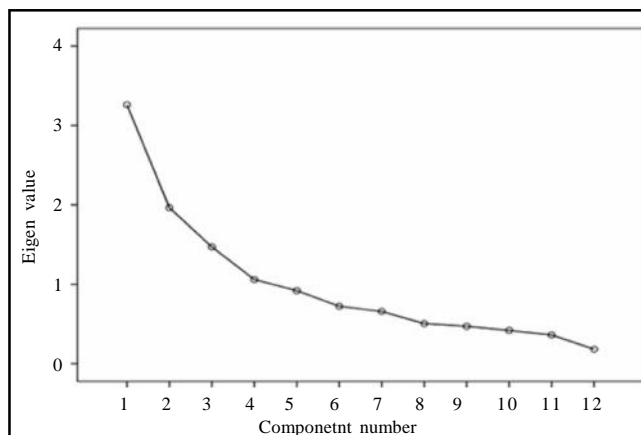


Fig. 1 : Cattell's scree plot for number of factors influencing the purchase of imported fruits in Bengaluru city

Table 2 : KMO and Bartlett's test for variance of the factors

KMO and Bartlett's test		
Kaiser-Meyer-Olkin measure of sampling adequacy		0.621
	Approx. chi-square	192.01
Bartlett's test of sphericity	Degrees of freedom	66.00
	Significance	0.00

Table 3 : Rotated factor matrix for factors influencing the purchase of imported fruits in Bengaluru city

Sr. No.	Particulars	Factor			
		1	2	3	4
1.	Health	0.265	-0.040	-0.131	0.090
2.	Taste	0.317	-0.101	0.046	0.178
3.	Quality	0.360	-0.047	0.033	-0.084
4.	Nutrients content	0.352	0.032	0.046	-0.423
5.	Attractive packaging	0.034	-0.148	0.445	0.160
6.	Low price	-0.023	-0.050	0.027	0.597
7.	Readily available	0.105	-0.035	0.379	-0.194
8.	More variety availability	0.063	0.268	-0.189	0.039
9.	Recognizable branded product	-0.067	0.502	-0.133	-0.363
10.	Brand image	-0.228	0.145	0.319	0.087
11.	More trust to origin	-0.003	0.287	0.058	0.148
12.	More seasonal products	-0.098	0.308	0.131	0.144

taste, quality and nutrients content reveals that consumers preferred imported fruits due to the perception of health benefits, good taste and high quality with good nutrients. Similarly, factor 2 relate to the more variety availability, branded product, trust on origin and also due to seasonality. Therefore, this factor is labelled as “origin brand availability” factor. The third factor labelled as “marketing strategies” related to attractive packaging, readily available fruit and brand image, where in consumers are influenced by the attractive packing of and brand image of the fruits. The fourth factor related to low price, where in consumers are influenced by the low price of imported fruits available in the market (Table 3). Similar work related to the present investigation was also carried out by Lin *et al.* (2008); Mevlut (2012); Pearson *et al.* (2005); Rees (1992) and Rika *et al.* (2016).

REFERENCES

- Clum, Gretchen B., Lucktt C., Johnson, J. and Gustatet, A.L. (2016). Factors influencing consumption of fruits and vegetables in older adults in New Orleans, Louisiana. *J. Nutr. Health & Aging*, **20** (7): 678-684.
- Dimech, M., Caputo, V. and Canavari, M. (2011). Attitudes of Maltese consumers towards quality in fruit and vegetables in relation to their food-related life styles. *Internat. Food & Agribusiness Mgmt. Rev.*, **14** (4): 21-36.
- Lin, Biing-Hwan, Yen, Steven, T. Huang and Ghung, L. (2008). Demand for organic and conventional fruits, the paper presented at the American Agricultural Economics Association Annual Meeting, Orlando, FL, July 27-29 pp.
- Mevlut, G. (2012). The analysis of households’ purchasing preferences for fruit juice in Turkey. *J. Food Agric. & Environ.*, **10** (3 & 4): 119-123.
- Pearson, T., Russell, J., Campbell, M.J. and Barker, M.E. (2005). Do ‘food desserts’ influence fruit and vegetable consumption? A cross sectional study, *Appetite*, **45** (2): 195–197.
- Rees, A. M. (1992). Factors influencing consumer choice. *J. Soc. Dairy Technol.*, **45** (4): 112-116.
- Rika, T., Mohamed, G. Z. and Hanum, Z. (2016). Preference for locally grown or imported fruit among the millennial generation in Johor, Malaysia. *J. Food Prod. Mktg.*, **22** (8): 891-904.

12th
Year
★★★★★ of Excellence ★★★★★