Asian Journal of Agricultural Extension, Economics & Sociology

39(8): 108-116, 2021; Article no.AJAEES.71561
ISSN: 2320-7027

A Study on Consumer WTP and Respondent's Income Wise Consumption Pattern for Khandsari Sugar in Coimbatore City of Tamil Nadu

G. Vivek[1*], T. Samsai[2], K. Mahendran[1] and S. Praveena[1]

[1]Department of Agricultural and Rural Management, CARDS, Tamil Nadu Agricultural University, Coimbatore, India.
[2]Department of Agricultural Economics, AC and RI, TNAU, Madurai, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJAEES/2021/v39i830632
Editor(s):
(1) Dr. Rajesh Kumar, Lala Lajpat Rai University of Veterinary and Animal Sciences (LUVAS), India.
Reviewers:
(1) Pannala Divakar Reddy, India.
(2) Fariba Azizzadeh, Islamic Azad University, Iran.
Complete Peer review History: https://www.sdiarticle4.com/review-history/71561

Original Research Article

Received 25 May 2021
Accepted 31 July 2021
Published 07 August 2021

ABSTRACT

Sugarcane (*Saccharum officinarum* L.) is one of the most important commercial crops of the tropics. It is the main source of sugar in the world. Jaggery (Gur) and Khandsari sugar are a traditional product of sugarcane which is the natural mixture of sugar and molasses. Jaggery and Khandsari are found to be a major agro-processing industry in rural sector. Today's scenario people were shifting towards the consumption of khandsari sugar due to various reasons. Hence this study was carried out with consumer willingness to pay towards the price of khandsari sugar and their consumption wise pattern through their income. Convenience sampling was adopted and collected the information from 120 respondents of Coimbatore city as divided of five zones. Primary data was collected through well-structured interview schedule and Chi-square test, Multiple regression analysis were carried out to analyse the study. The outcomes of the study revealed that income was significantly associated with consumption usage, purchasing frequency, purchasing quantity and consumption purpose. Also age, educational status and monthly income influenced the consumer to pay more for khandsari sugar.

**Corresponding author: E-mail: vivek14996@gmail.com;*

Aim: The purpose of the study was to find the consumer consumption pattern and their willingness to pay towards the purchase of khandsari sugar. Here, income was analysed with consumption pattern in Coimbatore city of Tamil Nadu.

Design of study and Methodology: The study was limited to Coimbatore city of Tamil Nadu with the sample of 120 respondents. The city was categorised into five zones such as south, north, central, east and west. The sampling method adopted here was convenience sampling. The data were collected through well-structured interview schedule and information was collected the people who purchased khandsari sugar. Chi-square test was used to analyse the consumption pattern of khandsari sugar whereas for consumer willingness to pay regression analysis was use.

Findings:

- Income status of the sample respondents showed that average income peoples preferred to purchase khandsari sugar and were medium sized families.
- The consumption usage of khandsari sugar by the sample respondents revealed that, income was the main factor which influenced to consume more khandsari sugar
- Consumer willingness to pay for khandsari sugar resulted that, the maximum chance of consumer willingness to pay for purchase of khandsari sugar was family type and the minimum chance of consumer willingness to pay for purchase of khandsari sugar was family size.

Keywords: Consumer; WTP; income; consumption pattern; khandsari sugar.

1. INTRODUCTION

Sugarcane (*Saccharum officinarum* L) is one of the most important commercial crops of the tropics. It is the main source of sugar in the world. Among the world level sugarcane production, India ranks second position (341.20 million tonnes) where as Brazil stands first (739.27 million tonnes) in the year 2017-18. In India, Uttar Pradesh ranks first in sugarcane production with 1623.38 lakh tonnes followed by Maharashtra with the production of 726.37 lakh tonnes, whereas Tamil Nadu stands fifteenth position with the production of 90.1 million tonnes in the year 2017-18. Production of khandsari sugar was simple where it required little skills. Khandsari sugar was called “Cottage sugar”. Production was carried out mainly in rural zones of Tamil Nadu. In Mumbai 80 percent of families were purchasing jaggery around fifty rupees per month mainly in people who residing in the city [13]. Directorate of Economics and Statistics, Ministry of Agriculture and Foreign Agricultural Services (FAS) revealed that India’s Khandsari sugar production in the year 2016-17 was 8.50 million MT and its estimation that of Khandsari sugar was going to increase to nine metric tonnes in the year 2018-19 (Anon 2017). In India, Uttar Pradesh ranks first in production of gur and Khandsari sugar followed by Maharashtra. In Tamil Nadu, Nammakal, Erode, Dindugal districts were majorly producing khandsari sugar. The consumers prefer various reasons in consuming khandsari sugar.

1.1 Literature Review

Goldberg and Roosen [1] revealed that willingness to pay could be defined as the sum of money representing the difference between consumers´ surplus before and after adding or improving a food product attribute.

Bajaj *et al.* [2] revealed that increased disposable income, obtained through capital formation, pushes up the consumption leading to economic development. The consumption function showed the relation between aggregate income and aggregate consumption. Consumer money drives the economy, and retail is where consumers spend that money. Retail business is governed by human consumption.

Yue and Tong [3] studied that consumers’ willingness to pay for the organic fresh produce was about the same as their willingness to pay for the local attribute. Consumers’ socio-demographics characters affected their choice between organically grown and locally grown produce. It also found that consumers patronized different retail venues to purchase fresh produce with different attributes.

Adesope *et al.* [4] used logistic regression for willingness to pay for safety label sugar. The results revealed that increasing in age showed that reduced WTP (Willingness to pay), and higher level education showed increased WTP among the consumers.

Wang *et al.* [5] examined that consumers were willing to pay for organic apples which were locally produced and got its certification by Northeast Organic Farming Association. Main attribute considered among consumers were price, production method, certification and product origin. As both group consumers who purchased organic food and consumers had not purchased organic food showed the strong willingness to pay for apples which grown locally than apples from other regions.

Kumar *et al.* [6] had focused on food consumption pattern changes among the Indian households and estimated the demand parameters of major food commodities. The major food commodities such as milk, edible oil, cereal, fruits, vegetables, pulses, fish, eggs and meat which constituted of about 95 percent of the total food consumed by the Indian Families.

Abdullah *et al.* [7] revealed that determination of brown sugar marketing segmentation was based on socio – economic factors of the consumers. They concluded that the old aged people consuming more brown sugar than young aged people and the females consuming more than males. House wives education and family income positively influenced the consumers to purchase the brown sugar.

Drummond *et al.* [8] defined WTP in terms of specified health improvement as the maximum amount of money an individual could pay for the health improvement still consider himself or herself better off.

Agarwal and Kasliwal [9] concluded that Indian consumers had a positive perception towards green products and services but positive perception of consumers does not had positive willingness to pay. 73 percent of Indian consumers were willing to pay an extra amount for green products and services but some of them were not ready to pay an extra amount for the same.

Rathi *et al.* [10] reported that 70 per cent of adolescents aged 14 to 16 years were consumed energy-dense snacks so that it leads to non-consumption of fruits and vegetables. Also 47 per cent of adolescents consumed energy-dense beverages. Finally, it resulted the poor dietary intakes. They suggested that effective nutrition promotion strategies to encourage healthy eating in adolescence by targeting through food supply and availability will increase the dietary intakes.

Somavarapu and Mubeena [11] studied that the factors influencing the purchase and its consumption of different varieties of soft drinks. The results of the study showed that majority of sample respondents consumed once in a week and the main factor influenced was their status symbol.

Kucher *et al.* [12] revealed their willingness to pay a premium price depending primarily on the purchasing power of the population, but also on gender, age, and social status. By using Pearson's chi-square test it revealed that men were more willing than women to choose environmental products due to their environmental safety and their selection was more often than in case of women based on environmental goods' price.

2. METHODOLOGY

The study was limited to Coimbatore city of Tamil Nadu with the sample of 120 respondents. The city was categorised into five zones such as south, north, central, east and west. The sampling method adopted here was convenience sampling. The data were collected through well-structured interview schedule and information was collected the people who purchased khandsari sugar. Chi-square test was used to analyse the consumption pattern of khandsari sugar whereas for consumer willingness to pay regression analysis was use.

3. RESULTS AND DISCUSSION

The data was collected and tabulated below. The study were carried out with the sample respondents consumption pattern based on their income. The results of income pattern of sample respondents were tabulated and presented in the Table 1.

It could be inferred from the table 1 that, 24.16 per cent of the sample respondents had income of Rs. 20,001 to Rs. 30,000 per month followed by 22.50 per cent of the sample respondents had their income of Rs. 30,001 to Rs. 40,000 per month. However 20.00 per cent of the sample respondents had their income of Rs. 40,001 to 50,000 per month. Since, nearly 60 percentage of sample respondents had the income of more than Rs. 30,000 per month. They are ready to spend for purchase of khandsari sugar.

The usage and consumption are based on income. Old age people consume more but income can be a main factor in purchasing the

khandsari sugar. As we gone through the many situations like vegetables or any commodity if production is low, the price for that commodity will be very high. So it affects the high quantity of purchase. Hence, the results were analysed based on income factor are presented in the Table 2.

It could be inferred from table 2 that, out of 120 sample respondents 31.67 per cent of sample respondents were consuming khandsari sugar between one to two years and 26.67 per cent of sample respondents were consuming khandsari sugar in the income category of Rs.20,001 - 30,000 per month. 10 per cent of sample respondents were consuming khandsari sugar in the income category of Rs. 20,001 - Rs. 30,000 per month as an average income consuming between one to two years and 0.83 per cent of sample respondent was in the income category of Rs. 30,001 - 40,000 per month consuming khandsari sugar between two to three years. Hence, the chi-square value for consumption of khandsari sugar with income factor was 20.67 and it could be concluded that there is significant association between income and consumption usage of khandsari sugar. As increase of income, consumption will be very high.

Consumers purchase is based on their need or based on their food consumption habits. Some consumers used daily but the quantity will be low like beverages while some of the consumers use high quantity at only one time like sweets. Here, the purchasing frequency analysed based on income factor. As income factor can influence more purchase but quantity can be very low. Hence, the results are presented in the Table 3.

It could be revealed from the table 3 that, among the total sample respondents 57.50 percent of sample respondents were purchasing khandsari sugar monthly once and 26.67 percent of sample respondents purchased khandsari sugar falls under the income category of Rs.20,001 - 30,000 per month. 14.17 per cent of sample respondents purchased khandsari sugar monthly once was under the income of Rs. 20,001 - 30,000 per month and 0.83 per cent of sample respondent purchased khandsari sugar weekly once of different income categories like Rs. 20,001-30,000 per month, Rs. 40,001 - Rs. 50,000 per month and above Rs. 50,000 per month respectively. Hence, the chi-square value for purchasing frequency of khandsari sugar with income factor was 19.20 and it could be concluded that there is significant association between income and purchasing frequency of khandsari sugar. Both factors are having an association with each other. As income increased, frequency of purchasing khandsari sugar also increased.

Point of purchase is very important attribute, for single product the consumer not preferred to go for any departmental stores. Instead they preferred at their local retail shops. But also the point of purchase vary from product to product. Since, the khandsari sugar evolved from sugarcane, consumer preferred at farmer field as they preferred to consume fresh or any kind of non-impurities. But, the city consumers preferred on the provisional shops or through any organic shops. The purchase location was divided into five categories such as specialised organic stores, farmers field, retail shops, supermarket and others were friends or any wholesalers. The results were analysed based on income factor with purchase location. Hence, the results are presented in the Table 4.

It could be inferred from the table 4 that, out of 120 sample respondents 40 percent of the sample respondents purchased khandsari sugar at retail shops and 26.67 percent of sample respondents purchased khandsari sugar falls under the income category of above Rs. 50,000 per month whereas 11.67 per cent of sample respondents under the income of upto Rs. 20000 and Rs. 20,001 – 30000 per month purchased khandsari sugar at retail shops. 0.83 percent of sample respondent purchased khandsari sugar at specialised organic stores came under the income category of upto Rs. 20,000 per month and the sample respondent of 0.83 percent preferred to purchase khandsari sugar in other shops was in the income category of Rs. 20,001 – 30,000 per month. Hence, the chi-square value for purchasing location of khandsari sugar with income factor was 15.94 and it could be concluded that there is no significant association between income and purchasing location of buying the khandsari sugar.

Purchasing quantity also considered as an important factor in consumption of khandsari sugar. Based on this also consumption pattern may vary time to time. The purchasing quantity was classified based on less than one kilogram, one to two kilogram, two to three kilograms and more than three kilograms and the results were analysed based on income factor. Hence, the results are presented in the Table 5.

It could be inferred from the table 5 that, among 120 sample respondents 49.17 percent of the

sample respondents purchased two to three kilograms of khandsari sugar and 26.67 percent of sample respondents purchased khandsari sugar falls under the income category of Rs. 20,001- 30,000 per month. Here, 14.17 percent of sample respondents came under the income category of Rs. 40,001- 50,000 per month who purchased the quantity between two to three kilograms of khandsari sugar and 0.83 percent of sample respondent purchased khandsari sugar of less than one kilogram with different income categories like Rs.20,001 – 30,000, Rs. 40,001- 50,000 and above Rs. 50,000 per month. The sample respondent (0.83 per cent) who purchased khandsari sugar of more than three kilograms was in the income category of Rs. 40,001- Rs. 50,000. Hence, the chi-square value for quantity purchased for khandsari sugar with income factor was 21.52 and it could be concluded that there is significant association between income and quantity of purchasing the khandsari sugar.

The purpose of consumption of khandsari sugar vary from people to people. Some people consumed through beverages by replacing the white sugar while some other peoples consume through sweets or any kind of food. Here, the consumption purpose was classified based on coffee or tea, sweets (sweetening agent) and others includes pongal preparations, consuming through foods. Hence, the results were based on age and income factor and are presented in the Table 6.

It could be concluded from the table 6 that, among the total sample respondents 73.33 per cent of the sample respondents consumed khandsari sugar along with coffee or tea and 26.67 percent of the sample respondents consumed khandsari sugar falls under income category of Rs.20,001- 30,000 per month. 16.67 percent of sample respondents consumed khandsari sugar along with coffee or tea in different income categories like Rs.20,001-30,000 and Rs. 30,001-40,000 per month and 0.83 percent of sample respondent consumed khandsari sugar along with sweets in different income categories like Rs. 30,001 – 40,000 and Rs. 40,001 – 50,000 per month. The sample respondent of 0.83 per cent consumed khandsari sugar along with other consumption purposes came under the income category of Rs. 20,001 - 30,000 per month. Hence, the chi-square value for purpose of consumption of khandsari sugar with income factor was 16.60 and it could be concluded that there is significant association between income and way of consumption in consuming the khandsari sugar.

Awareness about khandsari sugar is an important factor which will ultimately tell us about their knowledge and attitude towards khandsari sugar. The awareness may be influenced through many sources as consumer came across many situations. The source of awareness was classified based on friends and relatives, themselves, doctors advice and others. Hence, the results were analysed based on income factor and are presented in the Table 7.

It could be concluded from the table 7 that, out of 120 sample respondents 41.67 percent of the sample respondents got awareness by themselves and 26.67 percent of sample respondents falls under the income of Rs. 20,001-30,000 per month. 11.67 percent of the sample respondents got awared by friends and relatives with the income category of Rs. 20,001-30,000 per month and 0.83 percent of sample respondent got awareness through other source with different income categories like upto Rs. 20,000 per month , Rs. 20,001 - 30,000 per month and above Rs. 50,000 per month. The sample respondent of 0.83 per cent got awareness through doctors advice with different income categories like Rs. 40,001- 50,000 per month and above Rs. 50,000 per month. Hence, the chi-square value for source of awareness of khandsari sugar with income factor was 20.94 and it could be concluded that there is no significant association between income and source of awareness of buying the khandsari sugar.

3.1 Consumer Willingness to Pay for Khandsari Sugar

Consumer willingness to pay for khandsari sugar was analysed to know consumer satisfaction and how much it influenced to purchase the khandsari sugar. Multiple linear regression was performed to ascertain the consumer's willingness to pay for purchasing the khandsari sugar with dependent variables (yes=1, no=0) and age, gender, education, monthly income and family size chosen as the independent variables. The results are presented in the Table 78R square value = 0.746.

The consumer willingness to pay for purchase of khandsari sugar due to age, gender, educational status, monthly income and size of the family was 74.6 percent.

Table 1. Income Particulars of Sample Respondents

S.No	Income (Rs/month)	No. of. Sample Respondents	Percentage to Total
1.	Upto 20000	20	16.67
2.	20,001- 30,000	29	24.16
3.	30,001-40,000	27	22.50
4.	40,001-50000	24	20.00
5.	>50,000	20	16.67
Total		120	100

Source: Vivek and Samsai, 2019

Table 2. Association between Income and Consumption Usage of Khandsari Sugar by the Sample Respondents

Income (Rs /Month)	Consumption Usage				Total
	< 1 year	1-2 years	2-3 years	>3 years	
Upto 20,000	8(6.67)	4(3.33)	2(1.67)	7(5.83)	21(17.50)
20,001- 30,000	10(8.33)	12(10.00)	6(5.00)	4(3.33)	32(26.67)
30,001-40,000	8(6.67)	10(8.33)	1(0.83)	7(5.83)	26(21.67)
40,001-50000	0(0)	7(4.17)	5(4.17)	10(8.33)	22(18.33)
>50,000	3(2.50)	5(4.17)	3(2.50)	8(6.67)	19(15.83)
Total	29(24.17)	38(31.67)	17(14.16)	36(30.00)	120(100.00)

χ^2 value= 20.67; df=12; Sig=.055
(Figures in parenthesis indicate percentage total)

Table 3. Association between Income and Purchasing Frequency of Khandsari Sugar by the Sample Respondents

Income (Rs /Month)	Purchasing Frequency				Total
	Weekly once	2 Weeks once	Monthly once	2 Months once	
Upto 20,000	6(5.00)	3(2.50)	9(7.50)	3(2.50)	21(17.50)
20,001- 30,000	1(0.83)	6(5.00)	17(14.17)	8(6.67)	32(26.67)
30,001-40,000	2(1.67)	4(3.33)	13(10.83)	7(5.83)	26(21.67)
40,001-50000	1(0.83)	2(1.67)	16(13.33)	3(2.50)	22(18.33)
>50,000	1(0.83)	0(0)	14(11.67)	4(3.33)	19(15.83)
-Total	11(9.17)	15(12.50)	69(57.50)	25(20.83)	120(100.00)

χ^2 value= 19.20; df=12; Sig=.084
(Figures in parenthesis indicate percentage total)

Table 4. Association between Income and purchasing location of khandsari sugar by the sample respondents

Income (Rs /Month)	Purchase Location					Total
	Spe.Organic Stores	Farmers Field	Retail Shops	Supermarket	Others	
Upto 20,000	1(0.83)	2(1.67)	14(11.67)	4(3.33)	0(0)	21(17.50)
20,001- 30,000	2(1.67)	7(5.83)	14(11.67)	8(6.67)	1(0.83)	32(26.67)
30,001-40,000	4(3.33)	4(3.33)	7(5.83)	11(9.17)	0(0)	26(21.67)
40,001-50000	3(2.50)	5(4.17)	7(5.83)	7(5.83)	0(0)	22(18.33)
>50,000	3(2.50)	5(4.17)	6(5.00)	5(4.17)	0(0)	19(15.83)
Total	13(10.83)	23(19.17)	48(40.00)	35(29.17)	1(0.83)	120(100.00)

χ^2 value= 15.94; df=16; Sig=.248
(Figures in parenthesis indicate percentage total)

Table 5. Association between income and purchasing quantity of khandsari sugar by the sample respondents

Income (Rs /Month)	Quantity of Purchase				Total
	< 1 kg	1-2 kg	2-3 kg	>3 kg	
Upto 20,000	6(5.00)	5(4.17)	7(5.83)	3(2.50)	21(17.50)
20,001- 30,000	1(0.83)	9(7.50)	14(11.67)	8(6.67)	32(26.67)
30,001-40,000	2(1.67)	6(5.00)	11(9.17)	7(5.83)	26(21.67)
40,001-50000	1(0.83)	3(2.50)	17(14.17)	1(0.83)	22(18.33)
>50,000	1(0.83)	5(4.17)	10(8.33)	3(2.50)	19(15.83)
Total	11(9.17)	28(23.33)	59(49.17)	22(18.33)	120(100.00)

χ^2 value= 21.52; df=12; Sig=.043
(Figures in parenthesis indicate percentage total)

Table 6. Association between income and consumption purpose of khandsari sugar by the sample respondents

Income (Rs /Month)	Purpose of Consumption			Total
	Coffee or tea	Sweets (Sweetening agent)	Others	
Upto 20,000	15(12.50)	4(3.33)	2(1.67)	21(17.50)
20,001- 30,000	20(16.67)	11(9.17)	1(0.83)	32(26.67)
30,001-40,000	20(16.67)	1(0.83)	5(4.17)	26(21.67)
40,001-50000	19(15.83)	1(0.83)	2(1.67)	22(18.33)
>50,000	14(11.67)	2(1.67)	3(2.50)	19(15.83)
Total	88(73.33)	19(15.84)	13(10.83)	120(100.00)

χ^2 value= 16.60; df=8; Sig=.035
(Figures in parenthesis indicate percentage total)

Table 7. Association between income and awareness source of khandsari sugar by the sample respondents

Income (Rs /Month)	Source of Awareness					Total
	Friends & Relatives	Themselves	Mass & Media	Doctors Advice	Others	
Upto 20,000	7(5.83)	9(7.50)	2(1.67)	2(1.67)	1(0.83)	21(17.50)
20,001-30,000	14(11.67)	11(9.17)	2(1.67)	4(3.33)	1(0.83)	32(26.67)
30,001-40,000	13(10.83)	10(8.33)	0(0)	0(0)	3(2.50)	26(21.67)
40,001-50000	7(5.83)	11(9.17)	3(2.50)	1(0.83)	0(0)	22(18.33)
>50,000	3(2.50)	9(7.50)	5(4.17)	1(0.83)	1(0.83)	19(15.83)
Total	44(36.67)	50(41.67)	12(10.00)	8(6.66)	6(5.00)	120(100.00)

χ^2 value= 20.94; df=16; Sig= .181
(Figures in parenthesis indicate percentage total)

Table 8. Consumer willingness to pay for khandsari sugar

S. No	Factors	Coefficient	Standard Error	t	Significance
	Constant	-.319	.159	-2.008	.047
1.	Age	.038	.006	6.427	.000***
2.	Gender	.091	.089	1.019	.310
3.	Educational status	.011	.006	1.842	.068**
4.	Monthly Income	1.168	.000	1.853	.066**
5.	Family size	-.030	.033	-.906	.367

**** Highly significant, **More significant*

It could be concluded from the table 8 that factors like age, educational status and monthly income influencing consumer to pay more for khandsari sugar. It was tested under 10 per cent level of significance Increase of age leads to increase in willingness to pay more for khandsari sugar. Age (0.38) was highly significant and it influenced the consumer to pay more for khandsari sugar. This implies that aged people were consuming high quantity of khandsari sugar and thereby willing to pay more for khandsari sugar. Educational status (0.011) was highly influenced the consumer to pay more for khandsari sugar. This implies that educated people were highly aware about importance of khandsari sugar. Monthly income (1.168) also highly influenced the consumer willingness to pay for khandsari sugar. Increase of income level leads to increase in willingness to pay for khandsari sugar. Increase in one unit of income leads to increase in of 0.67 percent where consumer willing to pay for khandsari sugar.

4. CONCLUSION

The study showed that consumption pattern through income was significantly associated with consumption usage, purchasing frequency, purchasing quantity and consumption purpose. As consumption usage was dependent on income of the individual whereas purchasing frequency was differ from one person to person, this also due income of the sample respondent. Quantity purchase was also dependent on income level of the sample respondent, the sample respondent who had higher income will mainly prefer to buy khandsari sugar due to its health benefits. The consumption purpose also associated with income as mentioned above for all. Also many sample respondents were willing to pay high for khandsari sugar. The factor influenced among the sample respondents were age, educational status and monthly income.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Goldberg, Isabell, and Jutta Roosen. Measuring consumer willingness to pay for a health risk reduction of salmonellosis and campylobacteriosis; 2005.
2. Bajaj, Chetan, Rajnish Tuli, and V Srivastava Nidhi. "Retail Management, 0xford UniversityPress." New Delhi; 2009.
3. Yue, Chengyan, and Cindy Tong. "Organic or local? Investigating consumer preference for fresh produce using a choice experiment with real economic incentives." HortScience. 2009;44(2):366-371
4. Adesope, AAA, TT Awoyemi, Falusi, AO and Omonona. BT. "Willingness to pay for safety label on sugar and vegetable oil among households in South–Western Nigeria." Journal of Agriculture and Social Research (JASR). 2010;10(1):156-166
5. Wang, Qingbin, Junjie Sun, and Robert Parsons. "Consumer preferences and willingness to pay for locally grown organic apples: Evidence from a conjoint study." HortScience. 2010;45(3):376-381.
6. Kumar, Praduman, Anjani Kumar, Shinoj Parappurathu, and Raju SS. "Estimation of demand elasticity for food commodities in India." Agricultural Economics Research Review. 2011;24(347-2016-16882):1.
7. Abdullah, Weka Gusmiarty, Usman Rianse, Raden Marsuki Iswandi, Sitti Aida Adha Taridala, Ilma Sarimustaqiyma Rianse, Zulfikar La Zulfikar, Weka Widayati, La Rianda Baka, Abdi La Abdi, And Edy Cahyono. 2014. "Mathematical Model of Factors Influencing the Consumption of Brown Sugar in Southeast Sulawesi." Proceedings of the 2th International Conference on Mathematical, Computational and Statistical Sciences (MCSS'14). 2014;421-428.
8. Drummond, Michael F, Mark J Sculpher, Karl Claxton, Greg L Stoddart, and George W Torrance. 2015. Methods for the economic evaluation of health care programmes: Oxford university press.
9. Rathi, Neha, Lynn Riddell, and Anthony Worsley. "Food consumption patterns of adolescents aged 14–16 years in Kolkata, India." Nutrition Journal. 2017;16(1):50.
10. Agarwal, Srishti, and Neeti Kasliwal. "The Effect of Age as on Green Purchase Behavior in Hotel Industry." IPE Journal. 2017;7(2):53-63.
11. Somavarapu, Silpa, and Mubeena B. "A Consumer Survey on Preferences of Soft Drinks in Different Stages of Adolescence." Research & Reviews: Journal of Dairy Science and Technology. 2018;6(3):54-73.
12. Kucher, Anatolii, Maria Heldak, Lesia Kucher, Olha Fedorchenko, and Yuliia Yurchenko. "Consumer willingness to pay a price premium for ecological goods: a

case study from Ukraine." Environmental & Socio-economic Studies. 2019;7(1):38-49.
Available:https://www.mapsofindia.com/answers/india/state-biggestsugarcane-producer/

13. Mane M. Sulakshana, Shobha Udipi. "Consumption Pattern of Jaggery and Jaggery Product in 3 Cities in Western Maharastra." International Journal of Science and Research. 2015;6(6):7.
14. Agricultural statistics at a glance 2017. Directorate of Economics and Statistics, Department of Agriculture, Cooperation and Farmers Welfare, Ministry of Agriculture and Farmers Welfare, Government of India.

Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle4.com/review-history/71561