



Food Information Requirements of the Indian Consumers

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Authors' contributions

This work was carried out in collaboration among all authors. Authors SG and VK designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors DB and RK analyzed the study. All authors read and approved the final manuscript.

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ABSTRACT

Because of increase in the complexity of the food supply chain, there is information asymmetry in the food industry. But, in other hand, due to increase in concern over health, sustainability, local production, genetically modified crops and welfare issues, there is increase in concern of consumers regarding food information. Similarly, food information has direct implication to food safety. Although nutritional labelling is common in India, there exist knowledge gap about the actual informational need of the Indian consumers regarding the food they are consuming. This paper using the primary data collected through the structured web questionnaire tries to explore what information are required by the Indian consumers regarding the food and calculates their average willingness to pay for food with higher information. Survey was conducted in the month of March-April, 2019. A total of 514 valid responses were considered in the study. It was found that maximum number of consumers are willing to know more about chemical used at any stage,

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followed by production and marketing information and dietary health restrictions, respectively. It is found that Indian consumers at an average willing to pay 11.06% more for food with higher level of food information, than ordinary food. This research is valuable for future research on food information and various authorities to make policies regarding food information.

Keywords: Food information; food labeling; food safety; willingness to pay; emerging market.

1. INTRODUCTION

Being a consumer, food which has been produced by the producer or processed by processor cannot be judged through the sensory test only. The consumer cannot easily discern information about food known to the producer. In the case of non-qualitative attributes of the food, discerning is almost impossible. In order to remove such information asymmetry, various practices have been adopted or enforced by governmental bodies. Among them, food labelling is the most used and efficient way to convey food information from producer to consumers. Industrialization in food production made the consumer more dependent on food labelling as a source of food information for making purchase decisions [1].

Food information presented in food label is a major *means of communication* among the producer, seller and purchaser of food. Lin et al. [2] and Dimara & Skuras [3] mentioned that food label is a source of information to consumers and offers knowledge about food they intake. Glanz et al. [4] and Davies & Smith [5] emphasized that it is a means using which food choices are made. In the context of product differentiation strategy being followed by the food industries [6,7]. Cowburn & Stockley [8] claimed that provision of the label is important aspect of consumer protection. Not only this, it is also taken as a policy tool other concern like environmental protection and animal welfare [9–11].

Many countries across the globe follow *Codex Alimentarius* to frame their food policy. Labelling laws are designed to thwart fraud and deceptive food information to the consumer, which can be traced back to the middle ages in Europe. Food Safety and Standards Authority of India (FSSAI) is an autonomous institution established by the Government of India for setting up standards in food at par with *Codex*. Accepting the importance of food labelling, FSSAI has made Food safety and standards (packaging and labelling) regulations, 2011, which has been amended several times to fulfil the interest of consumer and other stakeholders [12]. As per this

regulation, every food articles in the packaged form should mandatory be labeled and containing various information like name of product, ingredients, additives, nature (vegetarian or non-vegetarian), nutrition, name of manufacturer, quantity, code or batch no., country of origin in case of imported food, instruction to use, and best before and use by date including date of manufacturing.

Although food labelling is being practiced in India, emphasis has been given to the nutritional labelling. There exist the knowledge gap what extra food information is required by Indian consumers. This paper tries to fill the knowledge gap existing in the Indian food industry. Objectives of this paper is to identify the higher food information requirements of the Indian consumers and calculate their average willingness to pay for the food with higher food information.

2. RESEARCH METHODOLOGY

In this study, data were collected by using web questionnaire by following convenience sampling method. Twelve questions were present in web questionnaire, which were meant to gather information about sociodemographic characteristics of Indian consumers and their level of consideration, frequency of checking, satisfaction, information/s sought and willingness to pay for that information/s. A pre-tested questionnaire was used for the collection of the primary data. A questionnaire was made on google form, and the link was sent to the consumers using the email and social networks (Facebook and WhatsApp), with a request to participate in the survey. Within a time frame of one month (March – April 2019), 526 consumers participated in the survey. However, only 514 responses were found to be valid and used for the study. To identify the food information required by the Indian consumer, eight different option was given to consumers based on the response of participant of first 50 participants, along with “other” option so that they can add other food attributes if they desire to know except the already mentioned one. Respondents were

allowed to select multiple options. During analysis, the ranking of food information was done based on the percentage of respondent desired to know more about that particular information. As nutritional labeling is commonly practiced in India, it was exempted from options given. Similarly, Respondents were asked to respond whether they are willing to pay higher for extra food information required by them. If their response is “Yes”, they were asked how much they would like to pay. Options given to them were “less than 10%”, “10 to 20%”, “20 to 30%”, “30 to 40%” and “40 to 50%” higher price they are paying at present. Based on their response, the average willingness to pay higher was calculated. It was calculated by using the given formulae:

$$X = \frac{\sum_i^n N_i x_i}{N}$$

Where,

- X = mean Willingness to pay
- N_i = Number of the respondent with a particular response
- x_i = consumer’s willingness to pay

For those who are not willing to pay more for higher food information, x_i was taken as 0. And, for other, midpoint of given interval response was taken as x_i (e.g. 5 for “less than 10%”, 15 for “10-20%”, so on.).

3. RESULT AND DISCUSSION

3.1 Socio-demographic Profile of the Respondents

Majority of respondent were male corresponding to 58.2%. In term of age, majority of the respondents belonged to 15-24 years age category, which constituted of 360 respondent, i.e. 70.03%. This is due to the reason that the majority of university student participated in this survey. Among the total respondents, 451 (87.7%) of the respondents were single, followed by married 62 (12.1%) and widowed/divorced 1 (0.2%).

Similarly, it was found that the majority of the consumers belong to a family of middle size. 282 respondents belong to middle family size, which corresponds to 54.86% of total respondents. It

was followed by a small family size having 228 respondent, i.e. 44.36% and large family size having 4 respondents, i.e. 0.78%, respectively.

In term of education, it is found that the majority of respondents hold a Bachelor’s degree, which constitutes 244 respondents (47.5%). It was followed by a Master’s degree (33.7%), High school (10.1%), PhD (6.0%) and Diploma (2.7%). At the time of the study, it is found that the majority of respondents were student, which constituted 76.5% of respondents. This category is high because the majority of respondents were taken from university premises. Other employment categories were service (14.2%), business (3.7%) and housewife (2.3%). 3.3% of the respondent were unemployed.

As a contrast to the majority of research studies, this study considered the monthly money flow along with personal income as the majority of respondents were student relying on money sent by their guardians and scholarship amount, rather than income earned by them. In this study, respondents were asked to select the appropriate category among the 6 different categories given. As expected, it was found that the majority of respondents belonged to “below 10000 INR” per month, corresponding to 59.7%. This was followed by 10000-20000 INR (11.1%), >50,000 INR (9.3%), 20000-30000 (7.8%), 30000-40000 (6.2%) and 40000-50000 (5.8%), respectively.

In general, it can be said this study comprises of the consumers, who are young, comparatively better-off and educated section of Indian society. Socio-demographic profiles of the respondents are presented in Table 1.

3.2 Consideration of Food Information by Respondents

It was found that the majority of respondent always cares about food information. 38.13% of respondent marked that they always care about food information while purchasing food product. This was followed by “sometime cared” (33.66%), “often cared” (20.82%), “rarely cared” (5.64%) and “Never cared” (1.75%). This reveals that majority of consumers have tendency to consider the food information for making choices of food product, as cited by [4] and [5]. Data of respondents on the basis they consider using food information in purchasing food product are given in Table 2.

Table 1. Socio-demographic profile of the respondents

Socio-demographic parameter	Categories	Frequency (percentage)
Gender	Male	299 (58.2 %)
	Female	215 (41.8 %)
Age	15-24 years	360 (70.03)
	25-34 years	130 (25.29)
	35-44 years	19 (3.70)
	45-54 years	5 (0.97)
Marital status	Single	451 (87.7)
	Married	62 (12.1)
	Widowed/Divorced	1 (0.2)
Family size	Up to 4 members	228 (44.36)
	5 to 10 members	282 (54.86)
	More than 10 members	4 (0.78)
Education	High school	52 (10.1)
	Diploma	14 (2.7)
	Bachelor's degree	244 (47.5)
	Master's degree	173 (33.7)
	PhD	31 (6.0)
Employment status	Student	393 (76.5)
	Housewife	12 (2.3)
	Service	73 (14.2)
	Business	19 (3.7)
	Unemployed	17 (3.3)
Monthly personal income/ money flow	< 10,000 INR	307 (59.7)
	10,000 – 20,000 INR	57 (11.1)
	20,000 – 30,000 INR	40 (7.8)
	30,000 – 40,000 INR	32 (6.2)
	40,000 – 50,000 INR	30 (5.8)
	>50,000 INR	48 (9.3)

Source: Consumer survey, 2019

Table 2. Distribution of respondent based on their consideration of food information

Response	Frequency	Percentage
Always cared	196	38.13
Sometime cared	173	33.66
Often cared	107	20.82
Rarely cared	29	5.64
Never cared	9	1.75
Total	514	100.00

Source: Consumer survey, 2019

3.3 Checking Food Information by Respondents

It was found that the majority of respondent rarely checks food information. 35.41% of respondent marked that they rarely check food information while purchasing food product. This may be because they may find it difficult to comprehend the information given in food level as in study done by [1] and [13], or may be consumers have doubt over reliability of food information given. This necessitates food labeling should be done in such a way that it can be comprehended by consumers. This was

followed by “often checks” (26.07%), “Never checks” (22.76%), “sometimes checks” (12.26%) and “always checks (3.58%), respectively.

Data of respondents based on checking food information in purchasing food product are given in Table 3.

3.4 Satisfaction of Respondent on Food Information Provided

It was found that the majority of respondents are neither satisfied nor dissatisfied with food information they are getting with food products.

40.47% of respondents fall under this category. This was followed by “satisfied” (22.96%), “unsatisfied” (20.04%), “Highly satisfied” (9.14%) and “Highly unsatisfied” (7.39%), respectively. Distribution of respondents on the basis they consider using food information in purchasing food product are given in Table 4.

3.5 Food Information Sought by Respondent

In this study, it was observed that “chemical used at any stage” ranked first as it was reported by the maximum number of respondents, which corresponds to 71.40% of total respondents. This may be due to the increased incidence of food adulteration and harmful chemical in the food product in India [14,15]. “Chemical used at any stage” was followed by “production and manufacturing information” (57.39%), “Dietary health restrictions” (55.45%), “Time of

production” (51.36%), “Environmental benefits” (43.58%), “Location of production site” (33.27%), “Animal welfare” (24.90%) and “Marketing channel” (21.60%), respectively. Result explicitly shows that consumers are more concerned in their health, this is in line with the reasons presented by consumers in the study done by [13]. Similarly, it is found that considerable amount of Indian consumers are concerned about the newer issues in consumerism like sustainability and welfare.

3.6 Willingness to Pay of Indian Consumers for Higher Food Information

Our study shows that majority of the respondents are willing to pay more for the higher food information. It was found that 313 respondents are willing to pay higher for the food information; they have desired to know more. This corresponds to 60.89% of the total respondents.

Table 3. Distribution of respondents on the basis habit of checking food information

Response	Frequency	Percentage
Always checks	18	3.58
Sometimes checks	63	12.26
Often checks	134	26.07
Rarely checks	182	35.41
Never checks	117	22.76
Total	514	100.00

Source: Consumer survey, 2019

Table 4. Distribution of the respondents based on their satisfaction with food information

Response	Frequency	Percentage
Highly unsatisfied	38	7.39
Unsatisfied	103	20.04
Neither satisfied nor dissatisfied	208	40.47
Satisfied	118	22.96
Highly satisfied	47	9.14
Total	514	100.00

Source: Consumer survey, 2019

Table 5. List of food information sought by the Indian consumer

S.N.	Food Information	Frequency	Percentage	Rank
1	Location of the production site	171	33.27	VI
2	Time of production	264	51.36	IV
3	Production and manufacturing information	295	57.39	II
4	Chemicals used at any stage	367	71.40	I
5	Marketing channel	114	21.60	VIII
6	Environmental benefits	224	43.58	V
7	Animal welfare	128	24.90	VII
8	Dietary health restriction	285	55.45	III

Source: Consumer survey, 2019

Table 6. Willingness of respondents to pay higher for higher food information

WTP for Higher food information	Frequency	Percentage
Not willing to pay	201	39.11
Less than 10%	110	21.40
10 – 20%	96	18.68
20 – 30%	38	7.39
30 – 40%	36	7.00
40 – 50%	33	6.42
Total	514	100.00

Source: Consumer survey, 2019

After analysis of the response, it was found that among the 313 consumers, who were willing to pay more 35.14% of them were willing to pay “less than 10%”. Similarly, 30.67%, 12.14%, 11.50% and 10.54% were willing to pay “10-20%”, “20-30%”, “30-40%” and “40-50%”, respectively.

It was found that the average willingness to pay more of Indian consumer for higher food information is 11.06%. Similarly, without considering the ones who are not willing to pay, willingness to pay for higher food information was found to be 18.16%. Result shows that there is a possible chance for increased revenue for producers/processors for providing extra food information.

4. CONCLUSION

Food information is provided to the consumer to decrease the information asymmetry existing in the food industry. Moreover, with the globalization in the food industries, industrial agriculture, rise in income level and increasing consumer awareness have made the dissemination of food information mandatory for food products. Although nutritional labeling is commonplace in India, there is an increased interest of consumers regarding other food information. This study tries to explore the extra food information requirements of Indian consumers and their willingness to pay for it. Results show that they are concerned about food information that has a direct relation with their health, showing increased health awareness among Indian. Similarly, it is found that consumers are willing to pay more premium for food with higher food information; this may provide an incentive for producers, processors, manufacturers and other parties involved in the food business. Also, it may be used as a basis for market segmentation [16]. As this study is first of its kind conducted in India, this may be useful for future research on food information and various authorities to make policies regarding food information.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Singla M. Usage and understanding of food and nutritional labels among Indian consumers. *Br. Food J.* 2010;112(1):83–92.
2. Lin CT, Lee JY, Yen ST. Do dietary intakes affect search for nutrient information on food labels?. *Soc. Sci. Med.* 2004;59(9):1955–1967.
3. Dimara E, Skuras D, Consumer demand for informative labeling of quality food and drink products: A European Union case study. *J. Consum. Mark.* 2005;22(2):90–100.
4. Glanz K, Rudd J, Mullis RM, Snyder P. Point of choice nutrition information, federal regulations, and consumer health education: A critical view. *J. Nutr. Educ.* 1989;21(2):95–100.
5. Davies GJ, Smith JL, Fast food: Dietary perspectives. *Nutr. Food Sci.* 2004;34(2) 80–82.
6. Kim SY, Nagya RM, Capps O. Food label use, self-selectivity, and diet quality. *J. Consum. Aff.* 2001;35(2):346–363.
7. Marks L. What’s in a label? *Food Policy.* 1984;9(3):252–258.
8. G. Cowburn, L. Stockley. Consumer understanding and use of nutrition labelling: A systematic review. *Public Health Nutr.* 2005;8(1):21–8.
9. Kehlbacher A, Bennett R, Balcombe K. Measuring the consumer benefits of improving farm animal welfare to inform welfare labelling. *Food Policy.* 2012;37(6):627–633.
10. Bennett RM. Farm animal welfare and food policy. *Food Policy.* 1997;22(4):281–288.

11. Grunert KG, Hieke S, Wills J. Sustainability labels on food products: Consumer motivation, understanding and use. *Food Policy*. 2014;44:177–189.
12. FSSAI, Food safety and standards (packaging and labelling) regulations, 2011. 2018.
13. Jain S, Gomathi R, Kar S. Consumer awareness and status of food labeling in selected supermarkets of Puducherry: An exploratory study. *Int. J. Adv. Med. Heal. Res.* 2018;5(1):36.
14. Prashar G, Plates loaded with pesticides: Survey shows fruit, vegetables are high on chemical content; 2013. [Online]. Available: <https://timesofindia.indiatimes.com/city/bengaluru/Plates-loaded-with-pesticides-Survey-shows-fruit-vegetables-are-high-on-chemical-content/articleshow/25405174.cms>. [Accessed: 24-Jun-2019].
15. Anonymous. India food watchdog bans 'toxic' bread chemical. 2016. [Online]. Available: <https://www.bbc.com/news/world-asia-india-36583502>. [Accessed: 24-Jun-2019]
16. McCullough J, Best R, Consumer Preferences for Food Label Information: A Basis for Segmentation. *J. Consum. Aff.* 1980;14(1):180–192.

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