

## A Study On Consumer Purchase Intention Towards Functional Dairy Products In Bengaluru North

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### ABSTRACT

Functional dairy products are healthy products of the future including probiotics, energy-boosting foods and those enriched with vitamins and minerals. Dairy products such as yogurt and cheese containing probiotics and milk containing omega-3 fatty acids have a prominent position in the development of functional foods. Functional dairy products market is growing steadily. Functional products benefits and health claims are highlighted in the front of pack labelling and nutritional labelling. Consumer awareness and perception related to these products have an important role in consumers' acceptance and subsequently long-term marketplace success of these products. The purpose of this paper is to know if the consumers prefer functional dairy products. The decision of whether the product is functional depends on nutritional labelling also. The findings were that almost all participants were unfamiliar with the term "functional dairy products," and few had consumed these products. Functional dairy products were not found to be necessary for some participants. Quantitative research approach was adopted in this research project to test pre-determined hypotheses and to generalize the results. Functional products that are used in a given month included probiotic milk, yoghurt, organic milk. The frequency of purchase of functional dairy products is 2 times a week and low fat cheese is purchased only once a week. If the health claims on the front of pack labelling is good purchase of functional dairy products is high as found out from the study. The participants were of the opinion that information provided from a trusted and credible source such as health professionals or authorities through different communication channels like television, training classes, shopping centre would create awareness about functional dairy products. There was a significant association between health consciousness and usage of functional dairy products. Consumers who care about their health give special importance to usage of functional dairy products. The results indicated that "Nutrition Label" had significant effects on "Reason to evaluate" and "Purchase Intention". In addition, "Reason to evaluate" also had a significant effect on "Purchase intention". Interestingly, female respondents and respondents with higher income had significant effects on "Reason to evaluate" which subsequently affected "Purchase intention". Data was analysed with the help of SPSS tools.

**Keywords:** Consumers' Purchase Intentions, Functional dairy products, Product Knowledge, Health Consciousness, Gender, Reason to evaluate, Purchase intention, Nutritional labels.

### 1. INTRODUCTION:

The dairy industry has been facing numerous challenges and opportunities due to changing consumers' preferences as well as due to environmental and ethical concerns. Dairy products and especially milk and curd have been traditionally regarded as healthy

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functional foods as such, they are also considered to contain numerous functional ingredients and materials that benefit human health such as energy, protein, calcium, probiotics etc. But the functional aspect of these foods are being further used by marketers by highlighting various health claims to market these products. Various health claims used on the nutritional labels of these products are "Rich in probiotics", "High in calcium", "Necessary for bone development", "Organic" etc. The primary objective of this research is to investigate consumers' purchase intentions towards functional dairy products. During the last decade, India has seen dramatic shift towards consumption of value-added and functional milk products such as cheese, yoghurt, ultra-heat treatment milk, flavoured milk, and whey. Most of the organized players in the dairy industry are expanding their product portfolios in the value-added and functional segment to take advantage of the changing consumer food preferences.

## **2. STATEMENT OF THE PROBLEM:**

Functional foods have drawn a lot of scientific attention throughout the years, especially in regards to improving dietary health and technological advancements. Given the ongoing changes in consumer preferences as well as environmental and ethical concerns, the dairy industry today faces a variety of obstacles and opportunities. Historically, dairy products—especially fluid milk—have been recognised as nutritious foods. Additionally, they are thought to contain a wide range of useful components and substances that are good for human health, including calcium, energy, protein, carbohydrate, and cholesterol. Future healthy food products will include probiotics, foods that enhance energy, and those that are vitamin and mineral fortified. Functional foods are among them. Milk containing omega-3 fatty acids and dairy products like yoghurt and cheese that include probiotics have a significant role to play in the creation of functional meals.

## **3. REVIEW OF LITERATURE:**

It may be argued that adding a nutritional panel to the package will increase consumer demand for food items and that it would be a wise strategic move for the area's food producers. (Prathiraja et al 2003)

Food labelling appeared to influence purchasing behaviour among non-Muslim customers in Malaysia, according to Abdul Latiff, Z.A. et al's (2013) research, MZ Hoque's (2018) findings demonstrated that buyers are more likely to purchase both ultra-high temperature treated fresh milk (UFM) and pasteurised fresh milk (PFM) products when given labelling information and sensory perceptions match. The link between product labels and customer purchase intentions can be mediated by sensory impressions in PFM, but not in UFM. His findings suggest that dietary information and personal health responsibility are the keys to the commercialization of fresh milk in terms of increasing relative weights and commonness.

Joshua Wesana and Xavier Gellynck et al(2020) pointed out that despite the substantial support for nutrition-sensitive value-chain techniques, data on consumer preferences for such treatments are sparse. By investigating a nutrition-sensitive chain labelling programme and utilising the Ugandan dairy industry as a case, this study seeks to close this gap. A poll of 250 customers was undertaken to learn more about their opinions on the significance of nutrition-sensitive chain labels in comparison to nutrition claims and facts. Additionally, a choice-based conjoint experiment with the qualities of price, brand, fat content, and nutrition label was created. Findings indicate that consumers had a higher favourable opinion of nutrition-sensitive chain labelling than nutrition claims or facts. According to ordered logistic regression analysis, consumers' perceptions of the significance of a nutrition-sensitive chain label in relation to sex, age, children, and milk purchase frequency were influenced by BMI, nutrition awareness, and label use. The greater utilities for the nutrition-sensitive chain label in the combined experiment provide as confirmation of this. The integration of nutrition-sensitive chain labelling with current labels in a way that encourages open interpretation by customers should be the main topic

of future study. These results can be used by industrial and policy actors in the agri-food industry to create and control suitable labelling programmes in the context of nutrition-sensitive value chains.

Tingyi Yang<sup>1</sup> and Senarath Dharmasena<sup>2</sup> (2020) highlighted that milk and other dairy products are especially important for ensuring the nutritional integrity of American households' diets. However, households in the United States are increasingly choosing dairy replacement beverages over regular milk due to issues with taste, nutrition, health, and the environment. This research is driven by the need to analyse changes in customers' purchasing behaviour and willingness to pay for conventional milk products and dairy substitute beverages while taking into account inherent qualities and variances of such characteristics. This study estimates both linear and semi-log hedonic pricing models after combining and organising Nielsen Homescan purchasing data with first-hand nutrition data. The findings demonstrate that consumers place the most value and weight on such qualitative characteristics as nutritional features, which include calories, protein, fat, vitamin A and vitamin D. Protein is the most valued component among calories, protein, fat, vitamin A, and vitamin D; other features include package size, multipack, and brand. The hedonic pricing order and value of these qualitative characteristics give producers with crucial information to further differentiate their products and create items that appeal to consumers' preferred traits. These qualitative characteristics are also predictive of consumers' purchasing behaviour.

Food safety concerns were becoming more widespread in most nations, having an impact on people's health, social stability, and economic growth. Consumers had long been concerned about the safety of dairy products. The purpose of this study was to examine consumer worries over dairy product label information and its contributing elements. The results showed that, overall, customer worry over dairy product label information was very high and that there were considerable disparities in consumers' levels of concern. According to regression analysis, customers' concerns regarding dairy product label information were substantially more influenced by education than by age. The government will be able to successfully educate the public about dairy products with the help of the study's findings as elaborated by Ce Xu,<sup>1</sup>Can Liu,<sup>1</sup>and Jingmin Cheng(2021)

While there is interest in organic food items, consumers who regularly purchase milk give special attention to physical factors such food safety, freshness, packaging, and flavour. They also take required information into account. This type of customer typically does not want to engage in learning more about items and is also highly interested in the "standard information" that producers are required to supply. The sole exception is "nutritional information," a disclosure type considered by a more informed and attentive consumer willing to make a small further investment in his information gathering. More emphasis is placed on specific information by consumers who care about environmental issues and animal welfare; this information is typically supplied freely by the manufacturer in an effort to improve his products.(Andrea Marchini et al 2021)

The most crucial details on the labels of dairy products to pay attention to were the date of manufacturing, shelf life, and storage conditions. This work has some political and regulatory importance, and national authorities should spend more on dairy education and communication to give consumers—including those from more diverse backgrounds—the information they need to make informed dairy shopping decisions. The public needed assistance in evaluating the state of food safety and making informed decisions, so it was imperative that the government strengthen its capacity to handle risks related to food safety. The study found that people had favourable opinions about dairy protein. This mindset persisted regardless of age, gender, or stage of life. There were misconceptions about the contents and health advantages of yoghurt. Yoghurt's low-fat nutrition claims were seen

negatively, which made people choose full-fat dairy products. More analysis and investigation are needed for this. (Nuala Collins et al 2023)

#### 4. OBJECTIVES:

- To study the purchase intention towards functional dairy products
- To map the characteristics of people who prefer functional dairy products
- To offer suggestions in relation to the usage of functional dairy products

#### 5. METHODOLOGY:

##### 5.1. Data Collection

A total of 100 questionnaires were collected from respondents in Bengaluru North. Convenience sampling method was used to select the sample. Functional dairy products were chosen as the product because dairy products are one of the most commonly consumed food. The aspects of nutrition labels such as nutrient claims, health claims, and ingredients were included in this study. Data was analysed with the help of SPSS software

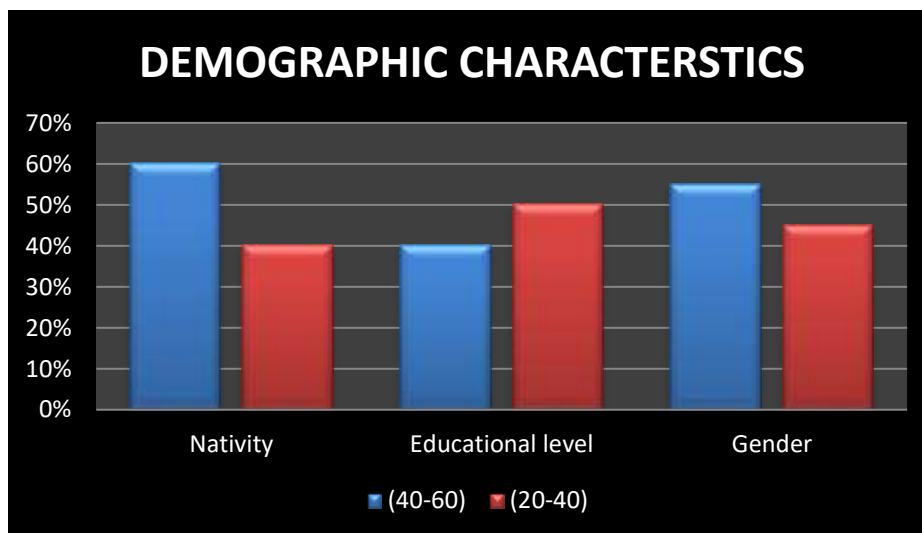
#### 6. ANALYSIS OF DATA:

##### Respondents' characteristics:

- 60% Respondents were of the age group 40-60 & 40% respondents were of the age group 20-40
- 60% Respondents were from Bengaluru as their native while 40% were from different places of North India
- 55% were men and 45% were women respondents
- Educational level of respondents was 40% were postgraduates 50% were undergraduates and 10% had completed their higher secondary (Table I)

TABLE 1.1: DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Age group	Nativity	Educational level	Gender
60% (40-60)	60% (From Bengaluru)	40% Postgraduates	55% (Men)
40% (20-40)	40% (From other places)	50% Undergraduates	45% (Women)

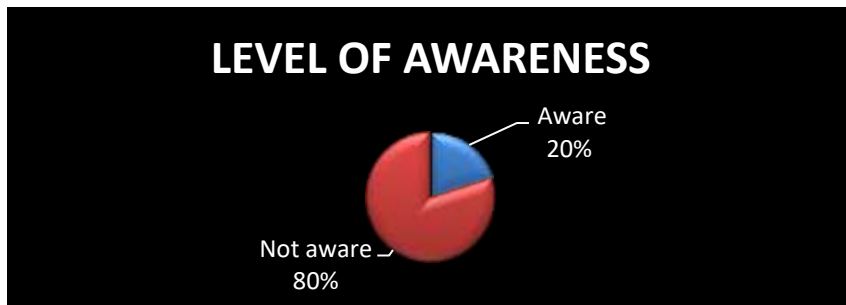


GRAPH1.1: DEMOGRAPHIC CHARACTERISTICS

TABLE1.2: LEVEL OF AWARENESS OF THE TERM "FUNCTIONAL DAIRY PRODUCT" AMONG THE SAMPLE.

Aware	Not aware
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20%	80%
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GRAPH 1.2: LEVEL OF AWARENESS

**Finding:** From the above graph it is evident that almost all participants were unfamiliar with the term “functional dairy products,”

TABLE 1.3: LEVEL OF NECESSITY

I need functional dairy products	I do not need functional dairy products
22%	78%



GRAPH1.3: LEVEL OF NECESSITY

**Finding:** Functional dairy products were not found to be necessary for some participants and they had less trust in health claims of these products for various reasons.

TABLE 1.4: AVERAGE USAGE OF FUNCTIONAL DAIRY PRODUCTS IN A GIVEN MONTH

Average usage of functional dairy products in a given month	
Men	7
Women	10
Average	8

**Finding:** The average usage of functional products is 8 .8 Functional products are used in a given month and that included probiotic milk, yoghurt, organic milk

TABLE 1.5: FREQUENCY OF PURCHASE OF FUNCTIONAL DAIRY PRODUCTS

Type of Functional Dairy Product	Frequency of Purchase in a week
Low fat butter	2

<b>Low fat cheese</b>	<b>1</b>
<b>Organic butter</b>	<b>2</b>
<b>Probiotic curd</b>	<b>2</b>
<b>Organic Milk</b>	<b>2</b>
	<b>FREQUENCY=2</b>

**Finding:** From the above table it is evident that the frequency of purchase of functional dairy products is 2 times a week and low-fat cheese is purchased only once a week

TABLE 1.6: CORRELATION BETWEEN HEALTH CLAIMS AND HABITUAL BUYING

<b>Belief in health claims</b>	<b>No of respondents who buy habitually</b>	<b>Belief in Health Claims</b>
<b>I believe health claims and buy functional dairy products everyday</b>	<b>12</b>	<b>26</b>
<b>I do not buy functional dairy products everyday</b>	<b>88</b>	<b>74</b>

**Finding:** So, the correlation coefficient between habitual buying and belief in health claims is 1. We can conclude that habitual buying is positively related to belief in health claims. If the health claims are good purchase of functional dairy products is high

TABLE 1.5: Analysis showing gender-based relationship between gender (male or female) and the preferred functional dairy product. The following table summarizes the results. The hypothesis was tested with a significance level of 10%.

		<b>Functional Dairy Products</b>			
		<b>Organic milk</b>	<b>Probiotic curd</b>	<b>Organic butter</b>	<b>Total</b>
<b>Gender</b>	<b>Male</b>	15	23	10	48
	<b>Female</b>	25	19	8	52
	<b>Total</b>	40	42	18	100

The hypotheses are:

Ho: Gender and preference towards functional dairy products are independent

H1: Gender and preference towards functional dairy products not independent

**Expected counts table**

<b>Gender</b>		<b>Organic milk</b>	<b>Probiotic curd</b>	<b>Organic butter</b>	<b>Total</b>
	<b>Male</b>		15 (19.2)	23 (20.16)	10 (8.64)
<b>Female</b>		25 (20.8)	19 (21.84)	8 (9.36)	52
<b>Total</b>		40	42	18	100

None of the expected counts in the table are less than 5. Therefore, we can proceed with the Chi-Square test.

**The test statistic is:**

$$(15-19.2)^2/19.2+(23-20.16)^2/20.16+\dots+(8-9.36)^2/9.36=2.95$$

The p-value is found by  $P(\chi^2 > \chi^2_{*}) = P(\chi^2 > 2.95)$  with  $(3-1)(2-1)=2$  degrees of freedom. Using SPSS, we find the p-value to be 0.2288.

**A p-value of more than 10% indicates that there is no relationship between gender and preference for functional dairy products. But since the P value is less than 10% there is relationship between gender and preference for functional dairy products**

TABLE 1.6: CORRELATION BETWEEN HEALTH CONSCIOUSNESS AND USAGE OF FUNCTIONAL DAIRY PRODUCTS.

Level of health consciousness	Health consciousness	Usage of functional dairy products
Health conscious consumers	30	25
Health indifferent consumers	70	75

**Finding:** There is a significant association between health consciousness and usage of functional dairy products. The correlation coefficient between Health consciousness and Usage of functional dairy products is 1. We can conclude that health consciousness is positively related to usage of functional dairy products, Consumers who care about their health give special importance to usage of functional dairy products

**Hypothesis model:**

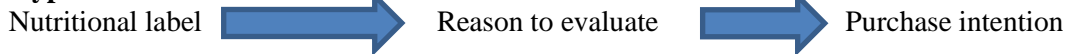


TABLE 1.7: INTENSITY OF PURCHASE INTENTION

Factors and Attributes	Highly agree	Agree	Neither agree/ disagree	Disagree	Highly disagree
I have reason to evaluate like health consciousness, fitness needs so I read labels	40	30	20	10	10
When I have more reasons to evaluate my purchase intention also becomes stronger	60	20	10	5	5

Factors and Attributes	Mean	Standard Deviation
I have reason to evaluate like health consciousness, fitness needs so I read labels	3.6	1.23
When I have more reasons to evaluate my purchase intention also becomes stronger	4.1	1.46

**INTERPRETATION:**

**Factor1:**

**Hypothesis 1:** There is a positive relationship between health consciousness, fitness needs, and reading labels

**Hypothesis 2:** There is no relationship between health consciousness, fitness needs, and reading labels

The mean score for this factor is 3.6, which indicates that, on average, respondents somewhat agree with the statement. The standard deviation of 1.23 suggests that there is some variability in the responses, but overall, the majority of respondents lean towards agreement.

Health consciousness level	30	40	20	10	10
Reading labels	40	30	20	10	10

The coefficient of correlation is 0.852941 which indicates that there is a positive relationship between health consciousness, fitness needs, and reading labels

**Factor 2:**

**Hypothesis 1:** There is positive relationship between having more reasons to evaluate and the intensity of purchase intention

**Hypothesis 2:** There is no relationship between having more reasons to evaluate and the intensity of purchase intention

The mean score for this factor is 4.1, indicating that respondents tend to strongly agree with the statement. The standard deviation of 1.46 suggests that there is some variability in the responses, but the majority of respondents show a strong agreement with this factor.

<b>Reasons to evaluate</b>	50	15	15	7	3
<b>Intensity of purchase intention</b>	60	20	10	5	5

The coefficient of correlation is 0.98409 which indicates that there is a positive relationship between having more reasons to evaluate and the intensity of purchase intention

Overall, the data suggests that respondents generally have positive attitudes towards the factors mentioned. They show a moderate to strong agreement with the statements related to health consciousness, affordability, and the influence of reasons on purchase intention.

**Finding:** The results indicated that "Nutrition Label" had significant effects on "Reason to evaluate" and "Purchase Intention". In addition, "Reason to evaluate" also had a significant effect on "Purchase intention".

**7. FINDINGS:**

Many participants were unfamiliar with the term “functional dairy products,” as functional dairy products refer to healthy organic products and the concept is developing in India as a novel concept like probiotic milk, probiotic curd etc. Functional products are used in a given month and that included probiotic milk, yoghurt, organic milk etc. If the health claims are good purchase of functional dairy products is high. There was a positive relationship between gender and preference for functional dairy products. Female consumers were found to evaluate labels and purchase more functional dairy products. Health consciousness is positively related to usage of functional dairy products. There is a positive relationship between health consciousness, fitness needs, and reading labels. Higher the reason to evaluate higher the purchase intention.

**8. DISCUSSION:**

Area where raw milk can be improved to capitalise on market opportunities brought about by shifting global lifestyles is with functional milk. Liquid breakfasts, high-protein whey drinks, energy drinks, milk with cocoa fortified with protein, and vitamin-enriched milks are examples of functional milk but many consumers were not aware of the concept due to various reasons. Regardless of the non awareness functional products were still used like probiotic milk, almond milk etc. Health claims on packages like “Rich in fortified milk with calcium and vitamins” etc increased the purchase of functional dairy products because people who shop are easily attracted to such claims

Gender had a significant effect on the purchase of functional dairy products as women are more likely to think about family health and shop for products that enhance family health. A successful product launch and the development of marketing strategies for the novel functional foods industry depend on an understanding of the factors that influence consumer acceptance and their relationships, given the competitive nature of the market for functional foods and consumers' intricate acceptance process health consciousness played a major role in the acceptance of functional dairy products. Higher the reasons to evaluate labels lead to high purchase intention because consumers who have interest in reading labels read because of the intention to purchase and vice versa. Increasing the reasons to



evaluate through a good package design with good health claims will increase the purchase intention among the consumers

### 9. RECOMMENDATIONS:

Many participants were unfamiliar with the term “functional dairy products, “awareness can be created about the same and marketers can utilise this term in marketing dairy products to market healthy segment of dairy products and can venture into new avenues of introducing functional products like probiotic milk etc. New business models can be developed in manufacturing and marketing dairy products. Functional dairy products were not found to be necessary for some participants and they had less trust in health claims of these products for various reasons like lack of transparency, lack of faith in food standards and food certifying agencies

Functional products that were used included probiotic milk, yoghurt, organic milk, these avenues can be ventured into by dairy product industry. Habitual buying was found to be positively related to belief in health claims. If the health claims are good purchase of functional dairy products is good. For habitual buyers. Consumers who regularly buy functional products had belief in health claims on the labels of the products. Habitual buying segment can be identified to market functional dairy products.

Consumers who care about their health give special importance to usage of functional dairy products. This segment also can be identified to market functional dairy products. There was a positive relationship between health consciousness, fitness needs, and reading labels. If there were more reasons to evaluate the intensity of purchase intention was high as found from the study. Various reasons that increased purchase intention towards functional products was health consciousness, affordability, etc. Special advertisement campaigns targeting women consumers about the functional dairy products can be undertaken

Package colours signifying different components or categories of dairy products can be used like probiotic milk, organic milk, fortified with calcium etc

### 10. CONCLUSIONS:

Innovators in the field of functional food creation have been dairy products. It makes sense for the dairy industry to broaden its product line to include other health-promoting items, as fermented dairy products have long been believed to provide health benefits. In recent years, functional dairy products have gained appeal and become more widely available in daily life. Concerns about consumers' health are fuelling the growth of the global market for functional dairy products. Growth is anticipated to be aided by consumers' growing inclination towards nutrient-dense foods in an effort to get higher levels of nourishment than those found in basic foods. Additionally, functional dairy products have long been linked to probiotic bacteria, organic acids, certain proteins, antioxidants, and highly absorbable calcium. We can conclude that more awareness oriented measures can be undertaken to educate the public about functional dairy products. Special care can be given in designing health claims as they majorly attract the consumers in purchasing functional dairy products. Purchase intention increases with reasons to evaluate, higher the reasons to evaluate higher the purchase intention. Health consciousness was significantly associated with buying functional dairy products.

### BIBLIOGRAPHY:

1. Pienwisetkaew, T. et al. (2022): Consumers' Intention to Purchase Functional Non-Dairy Milk and Gender-Based Market Segmentation. MDPI <https://ideas.repec.org/a/gam/jsusta/v14y2022i19p11957-d921844.html>
2. Prathiraja, P. & Ariyawardana, Anoma. (2011). Impact of Nutritional Labeling on Consumer Buying Behavior. Sri Lankan Journal of Agricultural Economics. 5. 10.4038/sjjae.v5i0.3475. [https://www.researchgate.net/publication/253879705\\_Impact\\_of\\_Nutritional\\_Labeling\\_on\\_Consumer\\_Buying\\_Behavior](https://www.researchgate.net/publication/253879705_Impact_of_Nutritional_Labeling_on_Consumer_Buying_Behavior)
3. Marchini, A., Riganelli, C., Diotallevi, F. et al. Label information and consumer behaviour: evidence on drinking milk sector. *Agric Econ* 9, 8 (2021). <https://doi.org/10.1186/s40100-021-00177-5>

4. <https://www.emerald.com/insight/search?q=Nuala%20Collins>
5. CeXu, Can Liu, Jingmin Cheng, "The Effects of Dairy Product Label Information on Cognition of Consumers: The Case of the China Choices", *International Journal of Food Science*, vol. 2021, Article ID 5589710, 8 pages, 2021. <https://doi.org/10.1155/2021/5589710>
6. B. E. Bandara, D. A. De Silva, B. C. Maduwanthi, and W. A. Warunasinghe, "Impact of food labeling information on consumer purchasing decision: with special reference to faculty of agricultural sciences," *Procedia Food Science*, vol. 6, pp. 309–313, 2016. <https://www.sciencedirect.com/science/article/pii/S2211601X16000626>
7. Najam, F., Banu, F., & Lokesh, G. R. (2023). A Study on Challenges of Small-Scale Industries in India. *International Journal of Management and Development Studies*, 12(11), 17-25.
8. Basha, S. M., Kethan, M., & Aisha, M. A. (2021). A Study on Digital Marketing Tools amongst the Marketing Professionals in Bangalore City. *JAC: A Journal of Composition Theory*, 14(9), 17-23.
9. Kethan, M., & Basha, M. (2023). Impact of Indian Cinema on Youths Lifestyle and Behavior Patterns. *East Asian Journal of Multidisciplinary Research*, 2(1), 27-42.
10. S. Saha, S. R. Vemula, V. V. Mendu, and S. M. Gavaravarapu, "Knowledge and practices of using food label information among adolescents attending schools in Kolkata, India," *Journal of Nutrition Education & Behavior*, vol. 45, no. 6, pp. 773–779, 2013. [https://www.jneb.org/article/S1499-4046\(13\)00578-2/fulltext](https://www.jneb.org/article/S1499-4046(13)00578-2/fulltext)
11. Labeling Nutrition-Sensitive Food Chains: A Consumer Preference Analysis of Milk Products Joshua Wesana, et al <https://www.ncbi.nlm.nih.gov/National Library of medicine> Published online 2020 Sep 15. doi: 10.3389/fnut.2020.00158
12. Consumers preferences on nutritional attributes of dairy-alternative beverages: hedonic pricing models Tingyi Yang<sup>1</sup> and SenarathDharmasena<sup>2</sup> Volume 2021 | Article ID 5589710 | <https://doi.org/10.1155/2021/5589710>
13. Reddy, K. S., & Ranganathan, S. Shoppers' Perceived Value in Organized Retailing during Pandemic and Pre-Pandemic. *RVIM Journal of Management Research*, 5.
14. Reddy, K., Reddy, K. S., Lokesh, G. R., & Ashalatha, D. (2023). A Study on Factors Influencing Organic Food and Purchase Intentions of IT Professionals. *resmilitaris*, 13(2), 3544-3552.
15. *Journal of Food Science and Nutrition Research* ISSN: 2642-1100 Shireen S\*, Muthumareeswari S, Sumaya, Bhuvaneshwari KM, Lakshmi Shree R
16. *Int J Environ Res Public Health*. 2022 Published online 2022 June doi: 10.3390/ijerph19127122