

## RESEARCH ARTICLE

# Analyzing the drivers and preferences of functional dairy food consumption: A socioeconomic perspective from Tamil Nadu

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**Abstract:** In today's consumer market, individuals are subject to various stimuli such as advertising campaigns, popular magazines etc., which shape their marginal consumption propensity. However, as Economic Theory teaches us, this propensity does not necessarily translate into consumer spending. This is strongly affected by consumers' eating habits, individual circumstances and other contextual variables. This study, conducted in the Tamil Nadu state of India explores the consumer preferences and factors moderating the consumption of functional dairy foods (FDFs) based on the data collected from 160 respondents chosen from different sale locations. Socioeconomic profiles were analyzed using tabular and frequency analysis, while indices were constructed to assess consumer preferences using Likert scale. The Seemingly Unrelated Regression model was employed to identify factors moderating functional dairy food consumption. The findings highlight that safety/trustworthiness was the most valued attribute among consumers, followed closely by nutritional and health benefits. Despite being in the early stages of adoption, functional dairy foods, particularly fortified milk, demonstrate significant growth potential. Key determinants of consumption include family income, occupation, dietary habits, family size and geographic location.

**Keywords:** Functional dairy foods, Seemingly Unrelated Regression model, Probiotic foods, Fortified foods, Consumer preferences

## Introduction

The functional foods are the food products fortified with special constituents that possess advantageous physiological effects (Robu et al. 2022a). As per International Symposium on 'Functional Foods: Scientific and Global Perspectives' held in Paris, 2001, the functional foods provide an unprecedented opportunity to expand the use of food - to improve health, decrease the risk of disease, and increase productivity (Verschuren, 2002).

While the concept is not entirely new, the recent popularity of researching the application of functional foods for curing human diseases has emerged. These foods reduce the risk of lifestyle-related disorders by achieving physiological functions beyond nutritional effects (Robu et al. 2022b). Among all, edible oil and dairy are the two most important functional food categories (Sharma & Garg, 2013). The dairy industry plays a crucial role in developing functional food market in the areas of food innovation. Functional dairy foods (FDFs) are also one of the world's most intense areas of food product innovation (Moodi et al. 2021). As consumer preferences evolve, there is a growing demand for dairy products that offer enhanced nutritional and health benefits (Sharma et al. 2024). This shift has driven significant innovations in the dairy industry, leading to the development of functional dairy foods (FDFs) that cater to modern dietary needs. The market in India for functional dairy foods (FDFs) is anticipated to experience a growth rate of 5.7 per cent from 2022 to 2032 (Shireen & Aneesh, 2021). Since these products have good market potential in India, we need to understand the behavioural aspects that drive consumer preferences and the demographic factors that influence purchasing choices which is crucial for supporting informed policy and market strategies aligned with sustainable food consumption practices. This study explores the consumer preferences and socioeconomic factors influencing the adoption of functional dairy foods in the state of Tamil Nadu, contributing valuable insights into the behavioural drivers and potential policy interventions to sustain functional food market in the country.

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## Materials and Methods

### Study design and Respondents

The study was conducted in Tamil Nadu state of South India, which is home to the country's largest private dairy plant, Hatsun Agro Product limited (HAP), along with several other major private dairy enterprises producing FDFs. Tamil Nadu ranks second among the larger Indian states with a per capita income of ₹1,66,463 at constant prices (base year: 2011-12) in the country marking the state with higher purchasing power (Government of India, 2023). The study is focused in the Chennai and Salem districts which were purposively selected. As Chennai is a metropolitan city, boasts a robust supply network for functional dairy foods, while Salem leads in average daily milk sales with 1.86 lakh litres per day (LLPD) among district unions for the year 2021-2022 (Government of Tamil Nadu, 2022).

The study utilizes both primary and secondary data. Primary data were collected through direct, personal interviews using a well-structured and pre-tested questionnaire. A total of 160 respondents were randomly selected from different purchasing locations, ensuring equal representation from urban/semi-urban and rural areas of both the districts. Secondary data were gathered from various sources, including research articles and websites, to supplement information on functional dairy foods, key market players, and product details.

The following groups of FDFs were included in the study. They were fortified milk (such as milk fortified with vitamins A & D), Probiotic curd, Probiotic lassi, Probiotic ice cream, Probiotic drinks, Malted milk foods and a few others like low-calorie dairy products etc. Users and non-users of functional dairy products were classified based on consumption of products mentioned by participants.

### Study instruments and statistical analysis

The analytical tools employed in the study include tabular and frequency analysis to understand the socio-economic profile of sample households, the Likert scale and weighted average index to assess consumer preferences, and the Seemingly Unrelated Regression (SUR) model to identify the factors influencing consumption of various functional dairy foods. The entire sample of respondents was stratified into three distinct income groups using well-established cumulative square root frequency approach.

### Construction of weighted average index for consumer preferences

A five-point Likert scale was developed to assess consumer preferences for functional dairy foods. The following steps were undertaken in constructing the scale:

**Statement Collection:** Initial statements were gathered from various sources, including literature reviews, research papers, and articles.

**Editing:** The statements were refined according to Edward's 14 principles to ensure clarity and relevance.

**Relevancy Test:** The edited statements were subjected to a relevancy test by a panel of 50 experts or judges, who rated each statement on a five-point continuum: most relevant, relevant, somewhat relevant, least relevant, and not relevant. Statements that were rated as "least relevant" or "not relevant" by more than 20% of the judges were removed.

**Interview Schedule Preparation:** An interview schedule was created using the statements that passed the relevancy test.

**Pilot Study:** Data were collected from 70 respondents in a pilot study to test the scale.

**Item Analysis:** The items were analyzed based on the mean value to determine their inclusion in the final scale. Respondents were divided into two groups (highest 25% and lowest 25%) based on their total scores. The mean difference between the highest and lowest groups was calculated for each statement. Only statements with a mean difference greater than 0.75 were included in the final scale.

**Reliability and Validity Testing:** The reliability of the scale was evaluated using Cronbach's alpha to ensure consistency and validity.

Finally, 24 statements were identified to evaluate consumer preferences, categorized under four key parameters, with each parameter comprising six statements. The parameters are as follows: Nutrition and Health Benefits, Safety/Trustworthiness, Affordability and Taste and Flavour. During the survey, statements were shown to the respondents in random order. Responses were given scores for their level of agreement: strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4) and strongly agree (5). Thereafter, the weighted average Index was calculated by using the following Equation (1):

$$\text{Index value} = \frac{(5N_5 + 4N_4 + 3N_3 + 2N_2 + 1N_1)}{A \times N} \quad \dots (1)$$

$N_5$  = Number of respondents who strongly agree,  $N_4$  = Number of respondents who agree,  $N_3$  = Number of respondents who are neutral/neither agree nor disagree,  $N_2$  = Number of respondents who disagree,  $N_1$  = Number of respondents who strongly disagree, A (Highest weight) = 5, N (Total number of respondents) = 160.

**Seemingly unrelated regression model (SURE Model)**

Functional dairy foods, such as fortified milk, probiotic lassi and so on share common characteristics. These foods are consumed for both nutritional properties as well as the satisfaction derived from consumption. For example, consuming fortified milk can fill the stomach (sense of fullness), potentially reducing the intake of other functional dairy products. So, the consumption of one may influence the consumption of others, reflecting joint utility maximization, where consumers make choices considering the combined utility derived from different functional dairy foods. This suggests that the equations representing these relationships, while individually distinct, may be linked through correlated error terms.

The SURE model accounts for this potential correlation, allowing for a more comprehensive analysis by considering the joint distribution of disturbances across equations.

Mathematically the SURE model is represented as in Equation (2): We consider a model comprising M multiple regression equations of the form:

$$y_{in} = \sum_{j=1}^{k_i} x_{ijn}\beta_{ij} + \sum_{m=1}^{l_i} d_{imn}\gamma_{im} + \varepsilon_{in} \quad \dots (2)$$

$n = 1, 2, \dots, N; i = 1, 2, \dots, M; j = 1, 2, \dots, k_i; m = 1, 2, \dots, l_i$

Where  $y_{in}$  is the  $n^{th}$  observation on the  $i^{th}$  dependent variable which is to be explained by the  $i^{th}$  regression equation.  $x_{ijn}$  is the  $n^{th}$  observation on the  $j^{th}$  explanatory variable appearing in the  $i^{th}$

equation.  $\beta_{ij}$  is the coefficient associated with  $x_{ijn}$  at each observation.  $d_{imn}$  is the  $n^{th}$  observation on the  $m^{th}$  dummy (categorical) variable appearing in the  $i^{th}$  equation.  $\gamma_{im}$  is the coefficient associated with  $d_{imn}$  at each observation.  $\varepsilon_{in}$  is the  $n^{th}$  value of the random error component associated with the  $i^{th}$  equation of the model. These M equations can be further expressed as in Equation (3):

$$\begin{pmatrix} y_1 \\ y_2 \\ \vdots \\ y_M \end{pmatrix} = \begin{pmatrix} x_1 & 0 & \dots & 0 \\ 0 & x_2 & \dots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \dots & x_M \end{pmatrix} \begin{pmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ \beta_M \end{pmatrix} + \begin{pmatrix} d_1 & 0 & \dots & 0 \\ 0 & d_2 & \dots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \dots & d_M \end{pmatrix} \begin{pmatrix} \gamma_1 \\ \gamma_2 \\ \vdots \\ \gamma_M \end{pmatrix} + \begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \vdots \\ \varepsilon_M \end{pmatrix} \dots (3)$$

or expressed as like Equation (4)

$$Y = X\beta + D\gamma + \varepsilon, E(\varepsilon) = 0, V(\varepsilon) = \Sigma \otimes I_T = \psi \quad \dots (4)$$

$i = 1, 2, \dots, M$

Where  $Y$  is a  $(T \times 1)$  vector with elements  $y_{in}$ . The  $y_i$  is the per capita consumption of functional dairy foods (kg or L/day).  $X$  is a  $(T \times k_i)$  matrix whose columns represent the T observations on the explanatory variables in the  $i^{th}$  equation. The various explanatory variables are as follows:  $x_1 = \log$  of monthly family income (₹),  $x_2 = \log$  of monthly food expenditure (₹),  $x_3 = \log$  of monthly non-food expenditure (₹),  $x_4 =$  Family size (No.),  $D$  is a  $(T \times l_i)$  matrix whose columns represent the T observations on the dummy (categorical) explanatory variables in the  $i^{th}$  equation. The various dummy explanatory variables are as follows:  $d_1 =$  Occupation of household head (0= Business,

**Table 1:** Socio-economic profile of sample households

Particulars	Low-income group	Middle-income group	High-income group	Overall
Income (₹/month)	Up to 74,000	74,000 to 1,54,000	1,54,000 to 4,00,000	-
Average family Income (₹/month)	49,846.15 <sup>a</sup>	98,333.33 <sup>b</sup>	2,15,272.73 <sup>c</sup>	90,775
No. of households (n)	78	60	22	160
Proportion of households (%)	48.75	37.50	13.75	100
Family size (no.)	3.95	4.05	4.36	4.04
Food Habit				
Non-vegetarian (n)	65	42	15	122
Vegetarian (n)	13	18	7	38
Occupation				
Salaried employment (n)	36	31	11	78
Self-employment (n)	25	17	4	46
Business (n)	17	12	7	36

(The values with different superscripts (a, b and c) indicate the significant difference at  $P < 0.05$ )

Source: Authors' calculation

1= Salaried employment, 2= Self-employed),  $d_2$  = Area of household location (0= Rural, 1= Urban/Semi-urban),  $d_3$  = District of household location (0= Chennai, 1= Salem),  $d_4$  = Food habit (0= Non-vegetarian, 1= Vegetarian),  $\beta$  is a  $(k \times 1)$  vector with elements  $\beta_{ij}$ ,  $\gamma$  is a  $(l \times 1)$  vector with elements  $\gamma_m$ ,  $\varepsilon$  is a  $(T \times 1)$  vector of disturbances  $\varepsilon_m$ ,  $\otimes$  denotes the Kronecker product operator,  $\Gamma$  is  $(MT \times MT)$  matrix and  $\Sigma = (\sigma_{ij})$  is  $(M \times M)$  positive definite symmetric matrix. The definiteness of  $\Sigma$  avoids the possibility of linear dependencies among the contemporaneous disturbances in the  $M$  equations of the model.

## Results and Discussion

### Socioeconomic profile of sample households

Understanding the basic socioeconomic profile of the sample households is crucial for interpreting the key findings of the study. This section sheds information on income, family size, occupation and food habits.

#### Income

Households were classified into three different income levels by cumulative square root frequency approach. The majority of households belonged to the Low-income group followed by the Middle-income group and then the High-income group. One-way ANOVA followed by Tukey's HSD test for post hoc comparisons were done to assess significant differences among the income groups.

#### Family size, food habits and occupation (primary source of income)

The average family size of the sample households was found to be 4.04. It was highest in the High-income group (4.36) followed by the Middle-income group (4.05) and the Low-income group (3.95). The food habits of consumers' households also had a crucial role in the consumption of functional dairy foods. Majority of the respondents in the Low-income group were non-vegetarian followed by the Middle-income group and the High-income group. Salaried employment was the primary source of income for around 48.75 per cent of the households followed by self-employment and business.

#### Consumer preferences for functional dairy foods

Consumers' preferences for a product are significantly influenced by their thoughts, opinions and principles. If consumers' preferences are known, one can identify the important factors that consumers consider before purchasing a product from the market. Therefore, understanding how consumers prefer different attributes of functional dairy foods (FDFs) is crucial for the product's success.

This section addresses consumers' preferences for functional dairy foods. It examines consumers' four important attributes: nutrition and health benefits, safety/ trustworthiness, affordability and taste and flavour. A weighted average index was constructed to evaluate consumers' preferences for functional dairy foods and the results are presented in Table 2.

The most important attribute for consumers was safety/ trustworthiness (0.792) followed by nutrition & health benefits (0.775), taste and flavour (0.572) and lastly affordability (0.559). A similar pattern was observed in the case of both the Middle-income group and the High-income group. Consumer households had a higher positive perception of safety/ trustworthiness. So, the respondents marginally prefer functional dairy foods for their safety to the nutritional benefit they offer. Previous finding in Turkiye also suggests that functional dairy foods acceptance is closely related to consumer belief in their overall health benefit (Yilmaz-Ersan et al. 2020).

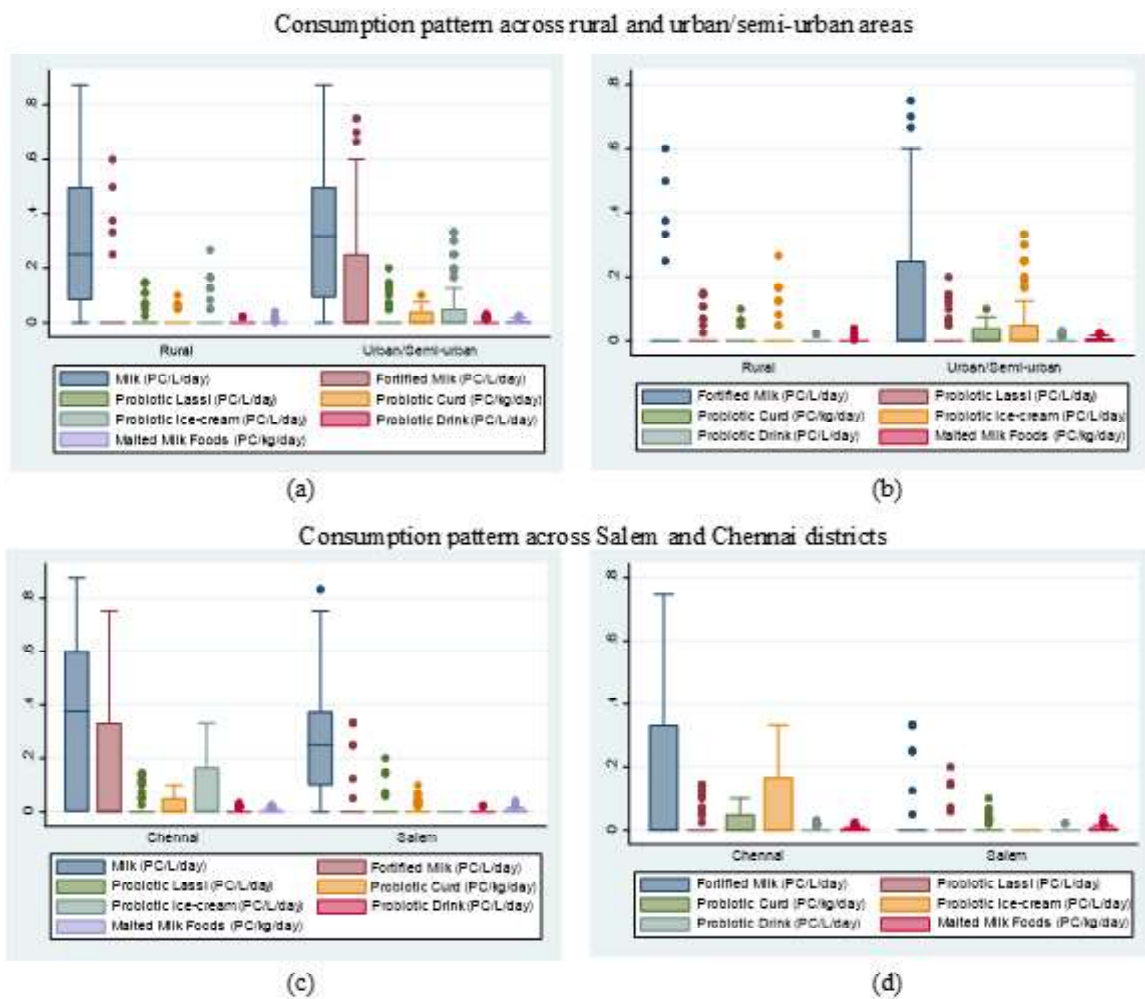
From Table 2, it is evident that for the Low-income group, affordability (0.582) is rated higher than the taste and flavour (0.524). However, both are rated lower than the nutrition and health attribute (0.774) and the safety/ trustworthiness attribute (0.788). This indicates that people prioritize nutrition and health as well as safety/trustworthiness the most, but still value affordability more than taste and flavour.

#### Consumption pattern of functional dairy foods

Figure 1a shows the consumption pattern of milk and functional dairy foods in rural and urban/semi-urban areas. In both rural and urban/semi-urban areas, milk shows the highest per capita consumption. The median consumption was higher in urban/semi-urban areas compared to rural areas, indicating greater daily milk intake in urban regions. The interquartile range (IQR) was also broader in urban areas, showing more variability in milk consumption patterns. For fortified milk, consumption was higher in urban/semi-urban areas with a wider Inter quartile range (IQR), indicating that a significant portion of the population consumes fortified milk. In contrast, rural areas show minimal consumption, with a much narrower IQR and lower median. Probiotic lassi consumption was low across both areas, with a slightly higher median and range in rural areas. The low medians suggest it was not a commonly consumed product among respondents. Probiotic ice cream shows limited consumption in rural areas and more in urban/semi-urban areas, but overall, very few respondents consume this product regularly.

The consumption of probiotic curd was minimal in both rural and urban/semi-urban areas, with slightly higher intake in urban areas. The per capita consumption of probiotic drinks was quite low, with urban areas having slightly more variability and higher outliers than rural areas. Malted milk food product shows very

**Fig. 1.** Consumption pattern of milk and functional dairy foods across different areas and districts



**Table 2:** Consumers’ preferences (preference Index) for functional dairy foods

Attributes	Low-income group	Middle-income group	High-income group	Overall
Nutrition and Health benefits	0.774	0.778	0.772	0.775
Safety/ Trustworthiness	0.788	0.796	0.792	0.792
Affordability	0.582	0.541	0.554	0.559
Taste and Flavour	0.524	0.593	0.598	0.572

minimal consumption, with almost negligible intake in both rural and urban/semi-urban areas.

Figure 1b shows among functional dairy foods, fortified milk stands out, especially in urban areas. The rest of the functional dairy products have minimal impact on the overall consumption patterns.

Figure 1c shows the consumption pattern of milk and functional dairy foods in Chennai and Salem Districts. The highest consumption was observed in Chennai, with a higher median and a broad IQR, indicating substantial daily intake. Salem shows lower median consumption with less variability. Similarly, fortified milk was more commonly consumed in Chennai, though its intake

is still lower than regular milk. Salem shows less consumption and variability.

Probiotic lassi had very low consumption in both districts, with slightly better uptake in Salem. The Probiotic ice cream had a modest presence in the Chennai district, with no consumers from Salem. Probiotic curd consumption was minimal, showing very low medians in both districts. Similar to other functional dairy foods, probiotic drinks and malted milk food consumption was low in both Chennai and Salem.

Figure 1d suggests functional dairy foods like fortified milk and probiotic ice cream have some presence in the market, especially in Chennai, but their overall consumption remains significantly

**Table 3:** Factors moderating the per capita consumption of milk and functional dairy foods by SURE model

VARIABLES	(1) Per capita consumption of milk (L/day)	(2) Per capita consumption of fortified milk (L/day)	(3) Per capita consumption of probiotic lassi (L/day)	(4) Per capita consumption of probiotic curd (kg/day)	(5) Per capita consumption of probiotic ice cream (L/day)	(6) Per capita consumption of probiotic drink (L/day)	(7) Per capita consumption of malted milk food (kg/day)
Monthly family income	-0.135*** (0.043)	0.084** (0.038)	0.009 (0.008)	0.006 (0.005)	0.027* (0.016)	0.000 (0.001)	0.000 (0.001)
Monthly food expenditure	0.617*** (0.081)	-0.112 (0.071)	0.030** (0.015)	0.004 (0.009)	-0.007 (0.029)	-0.002 (0.002)	0.005** (0.003)
Monthly non-food expenditure	-0.179*** (0.055)	0.019 (0.048)	-0.022** (0.010)	0.005 (0.006)	0.001 (0.020)	0.002 (0.002)	0.001 (0.002)
Family size	-0.021 (0.020)	0.006 (0.018)	0.003 (0.004)	-0.003 (0.002)	-0.014* (0.007)	-0.000 (0.001)	-0.000 (0.001)
Occupation dummy (Base = Business)							
Salaried employment	0.001 (0.043)	0.009 (0.038)	-0.023*** (0.008)	0.003 (0.005)	0.025 (0.015)	0.002 (0.001)	-0.002 (0.001)
Self-employment	0.002 (0.050)	-0.010 (0.044)	-0.024** (0.009)	0.009 (0.006)	0.032* (0.018)	0.000 (0.001)	-0.001 (0.002)
Area dummy (Base = Rural)							
Urban/ Semi-urban	-0.007 (0.034)	0.067** (0.030)	-0.001 (0.006)	0.012*** (0.004)	0.010 (0.012)	0.001 (0.001)	0.002* (0.001)
District fixed effect = Yes (Base = Chennai ( $d_0$ ))							
Salem ( $d_1$ )	-0.027 (0.036)	-0.101*** (0.031)	0.001 (0.007)	-0.007* (0.004)	-0.075*** (0.013)	-0.002* (0.001)	0.003*** (0.001)
Food habit dummy (Base = non-vegetarian)							
Vegetarian	0.065* (0.037)	0.011 (0.033)	0.022*** (0.007)	0.008* (0.004)	-0.001 (0.013)	0.003** (0.001)	0.002 (0.001)
Constant	-2.131*** (0.711)	0.000 (0.624)	-0.142 (0.131)	-0.135* (0.080)	-0.136 (0.257)	-0.000 (0.021)	-0.054** (0.022)
Model adequacy check							
Observations	160	160	160	160	160	160	160
R-squared	0.368	0.187	0.200	0.180	0.292	0.107	0.118

Note: Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Authors' calculation

Breusch-Pagan test of independence:  $\chi^2(21) = 93.434$ , p value  $\leq 0.001$

lower than traditional dairy products like milk. This underscores the need for more targeted efforts to increase the adoption and consumption of functional dairy foods, particularly in areas like Salem where their presence is minimal.

From the Box and Whisker Plot, we can conclude that regular milk remains the dominant product in terms of consumption, regardless of the area or district. Functional dairy foods were still in the early stages of adoption, with fortified milk showing the most promise. Urban and semi-urban areas, particularly Chennai, show higher consumption of these products compared to rural areas or smaller districts like Salem. Other studies have also found that participants from urban areas are more likely to consume functional dairy products (Ali & Rahut, 2019; Salmani et al. 2020). This highlights the potential for targeted marketing and awareness campaigns to increase the adoption of functional dairy foods.

### Determinants of functional dairy foods consumption

The results of the SURE model analysis shown in Table 3 revealed that monthly family income, monthly food and non-food expenditure and food habits of the respondents had a significant influence on per capita consumption of milk. This model indicates that an increase in the respondent's monthly family income was causing a decrease in per capita consumption of milk. This might be due to income increases, consumers often reduce the normal intake of regular milk and use specialized and health-focused products, such as functional dairy foods (e.g., fortified milk or probiotic ice cream). This is reflected in the significant positive coefficients observed in other equations, indicating that wealthier individuals prioritize health, are influenced by premium product marketing, and seek to diversify their diets with items offering added benefits beyond basic nutrition. Bennett's Law supports this trend, where rising income leads to more diversified, nutrient-rich food consumption.

A one per cent increase in the respondent's monthly food expenditure caused an increase in per capita consumption of milk by 0.00617 L/day and a one per cent increase in the respondent's monthly non-food expenditure caused a decrease in per capita consumption of milk by 0.00179 L/day. Vegetarians tend to consume more milk compared to non-vegetarians, with a difference of 0.065 L/day.

For fortified milk, monthly family income, area and district of the respondents had a significant influence on per capita consumption. A one per cent increase in the respondent's monthly family income was causing an increase in per capita consumption of fortified milk by 0.00084 L/day. The model indicates that respondents from urban or semi-urban areas tend to consume more fortified milk than those from rural areas by 0.067 L/day. While the district fixed effect in the model suggests

that respondents in Salem consume less fortified milk than those in Chennai by 0.101 L/day.

For probiotic lassi, monthly food and non-food expenditure, occupation of the household head and food habits of the respondents had a significant influence on per capita consumption. A one per cent increase in the respondent's monthly food expenditure was causing an increase in per capita consumption by 0.00030 L/day and a one per cent increase in the respondent's monthly non-food expenditure was causing a decrease in per capita consumption by 0.00022L/day. The model indicates that respondents who are salaried employees or self-employed tend to consume less probiotic lassi compared to those in business by 0.023 L/day and 0.024 L/day, respectively. Vegetarians tend to consume more compared to non-vegetarians, with a difference of 0.022L/day.

For probiotic curd, the area, district and food habits of the respondents had a significant influence on per capita consumption. The model indicates that respondents from urban or semi-urban areas tend to consume more than those from rural areas by 0.012 kg/day. While the district fixed effect in the model suggests that respondents in Salem consume less than those in Chennai by 0.007 kg /day. Vegetarians tend to consume more compared to non-vegetarians, with a difference of 0.008 kg /day.

For probiotic ice cream, monthly family income, family size, occupation (self-employment) and district of the respondents had a significant influence on per capita consumption. A one per cent increase in the respondent's monthly family income was causing an increase in per capita consumption by 0.00027 L/day. As family size increases by one member, the per capita consumption of probiotic ice cream decreases by 0.014 L/day. This is because the household's budget and resources must be spread across more individuals. Larger families may prioritize purchasing necessities or lower-cost items over speciality products like probiotic ice cream. Additionally, such products might be seen as a luxury or non-essential, leading to reduced per capita consumption when more members need to be accommodated within the same budget. The model indicates that self-employed respondents tend to consume more compared to those in business by 0.032 L/day. The district fixed effect in the model suggests that respondents in Salem consume less than those in Chennai by 0.075 L/day.

For probiotic drinks, the district and food habits of the respondents had a significant influence on per capita consumption. The district fixed effect in the model suggests that respondents in Salem consume less than those in Chennai by 0.002 L/day. Vegetarians tend to consume more compared to non-vegetarians, with a difference of 0.003L/day. For malted milk food, monthly food expenditure, area and district of the respondents had a significant influence on per capita consumption. A one per cent increase in the respondent's monthly food expenditure was

causing an increase in per capita consumption by 0.00005 kg/day. The model indicates that respondents from urban or semi-urban areas tend to consume more than those from rural areas by 0.002 kg/day. The district fixed effect in the model suggests that respondents in Salem consume more than those in Chennai by 0.003 kg/day.

### Conclusions and Implications

The findings indicate that in Tamil Nadu, consumers place the highest importance on the nutritional and health benefits as well as the safety and trustworthiness of functional dairy foods, with affordability also playing an important role. Despite this interest, the study reveals that functional dairy foods are currently consumed in very small quantities, underscoring both significant challenges and opportunities for market expansion in this sector. Among these products, fortified milk emerged as the most widely consumed product, highlighting an area for targeted market expansion.

The analysis further used econometric specification to analyse the critical factors influencing the consumption of functional dairy foods, including family income, price sensitivity, occupation, dietary habits, family size and geographic location. Addressing these factors through targeted marketing and distribution efforts could help promote the wider adoption of functional dairy foods. The findings of this study show urban consumers, those with higher incomes, and vegetarians have a greater likelihood of consuming these products. Promoting these products among higher-income, urban and vegetarian consumers could contribute to a shift toward more nutritionally conscious and environmentally sustainable consumption patterns. These insights underscore the potential for behaviorally informed, targeted strategies to encourage functional dairy food consumption in specific consumer segments, facilitating growth within the functional dairy food market. Also, the other areas of inquiry that could be explored in future studies could include health consciousness, which could be analyzed by incorporating a dummy variable to assess how health considerations impact functional dairy food consumption.

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