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From Farm to Fork: Analyzing Consumer Attitudes Toward Millet Cultivation and Consumption in Palakkad

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ABSTRACT: The study examines customers' awareness and knowledge of millet production and its nutritional and environmental benefits, consumer preferences and purchase behaviour, and factors influencing the acceptance of millet-based products among customers. Primarily, the aim is to measure the levels of awareness, ascertain the preference of consumers and work out the ways for adoption of millet.

The researchers employed a quantitative study with analytical and descriptive design. An appropriate questionnaire was prepared and data was collected from 81 respondents selected through stratified sampling for various age groups. Statistical measures were performed on SPSS software using one-way ANOVA, one-sample t-tests, and Friedman test.

Millet production awareness and knowledge of customers is significantly different according to the age of customers. Younger groups have less awareness than older groups, suggesting a need for effective targeted awareness campaigns. Consumer opinions revealed positive perceptions for millet products as cheap, available and versatile, and with large differences from the test value ($p < 0.05$). According to the study, awareness campaigns topped the chart, and social recommendations came second.

Promotional strategies, branding, and social endorsements play a critical role in awareness and acceptance of millets. It means that producers and marketers must create awareness campaigns that will enhance product visibility and affordability. According to the study, gaps in customers' awareness and leveraging influential factors can be beneficial for millet consumption. Also, it can promote better and sustainable eating.

1. INTRODUCTION

Millets, which are small-seeded grains that have been cultivated for thousands of years, have recently begun to capture the spotlight for their nutritional and environmental benefits. For centuries, millets have been integral to food systems of various regions in India, including Kerala, as they form part of traditional agriculture systems and diets (George et al., 2021). The last few decades has seen a major decline in the production and consumption of millet due to the people's preference for polished grains of rice and wheat which is seen as modern or superior to millets (Shijitha et al., 2021). This change not only resulted in the abandonment of traditional ideas but also gave rise to issues related to nutrition security and sustainable agriculture.

Given this backdrop, the current research on customer perception toward millet production and usage in Palakkad is relevant and timely. As Palakkad is known as the "Rice Bowl of Kerala", its economy is mainly agrarian.

Crops like finger millet (ragi), pearl millet (bajra), and sorghum (jowar) are hardy types that require least amount of water while not needing very fertile soils, which suit cultivation under climate change and lack of water (George et al., 2021; Devi et al., 2024). According to Amrutha et al. (2024), millets are a treasure trove of nutrition with high fibre, protein, iron and other nutrients and a low glycemic index suitable for lifestyle-related disorders.

Millets are still underutilized mainly due to unawareness, unavailability and lack of demand from consumers (Divya, 2024). Additionally, cultural stigma such as millets being associated with “poor men’s food” creates a psychological barrier in recent generations (Indumathy and Jeyalakshmi, 2024).

Despite global initiatives like the International Year of Millets declared by UN and national initiatives like the National Mission on Millets advocating millet production, there is a huge gap between policy initiative and ground reality prevailing in Palakkad (Bharathy et al., 2024). The objective of this study seeks to close this gap.

1. To analyze the level of customer awareness and knowledge regarding millet production and its nutritional and environmental benefits.
2. To analyze consumer preferences and buying behavior towards millet products based on price, availability, and perceived health benefits.
3. To determine factors influencing customer acceptance and usage of millet products and identify potential avenues to foster adoption.

2. MATERIALS AND METHODS

2.1 Research Approach and Design

This study is quantitative and used analytical and descriptive type of research. The methodology examines the association between the demographic variables (e.g. age) and customer awareness, and also does the estimation of the factors influencing the purchase behaviour and preference of millet-based products.

2.2 Population and Sampling

The target populations were consumers from different demographic groups living in Palakkad. The age, gender and the socio-economic diversity were taken into consideration in the study and the stratified sampling was used. The sample size for the study was $N = 81$ respondents, which meant that the study had adequate statistical power for the empirical analysis.

2.3 Data Collection Tool

Primary data collected by using structured questionnaire of closed ended items and standardised likert scales. The tool collected data on demographics, awareness of the nutritional and environmental benefits, preference regarding buying and adoption factors.

2.4 Statistical Analysis

Processing of data was done on SPSS software. The statistical techniques used include one-way ANOVA, one-sample t-tests, and Friedman test. According to a study conducted by the researchers on “A Study on Consumer’s Acceptance of Organic Products”, it was shown that consumers’ perceptions and acceptance of various organic products had a positive influence on their acceptance of organic products.

3. RESULTS AND DISCUSSION

3.1 Customer Awareness and Knowledge Across Age Groups

To evaluate whether age influences awareness and knowledge regarding millet production and its benefits, a One-Way ANOVA was executed under the hypotheses:

H₀: There exists no significant difference in the mean score on customer awareness and knowledge about millet production and its nutritional and environmental benefits based on age.

H₁: The mean score on customer awareness and knowledge differs significantly based on age.

Table 1. ANOVA on Customer Awareness and Knowledge

Statement / Variable	Source	Sum of Sq.	df	Mean Sq.	F	Sig.
I am aware of the nutritional benefits of millets.	Between	49.407	4	12.352	30.659	0.000
	Within	30.618	76	0.403		
	Total	80.025	80	-		
I know that millet farming is environmentally sustainable.	Between	65.766	4	16.442	70.733	0.000
	Within	17.666	76	0.232		
	Total	83.432	80	-		
I understand the traditional importance of millets in Indian diets.	Between	52.378	4	13.095	61.848	0.000
	Within	16.091	76	0.212		
	Total	68.469	80	-		
I believe millets are healthier compared to grains like rice and wheat.	Between	84.115	4	21.029	119.349	0.000
	Within	13.391	76	0.176		
	Total	97.506	80	-		
I have seen educational campaigns promoting millets.	Between	82.240	4	20.560	73.477	0.000
	Within	21.266	76	0.280		
	Total	103.506	80	-		
I think millets should be included in regular diets.	Between	55.771	4	13.943	45.496	0.000
	Within	23.291	76	0.306		
	Total	79.062	80	-		
I am aware of different types of millet crops available locally.	Between	70.196	4	17.549	100.766	0.000
	Within	13.236	76	0.174		
	Total	83.432	80	-		

Source: Primary Data

The null hypothesis is rejected for all items tested. Age has a major influence on consumer awareness. According to older respondents' knowledge scores, which pertain to nutrition and traditional importance, they were higher than younger groups. The awareness score of younger groups was quite low. It clearly indicates a focused target area for implementation of promotion programs.

3.2 Consumer Preferences and Purchasing Behavior

A One-Sample t-Test was performed with a value of 0.6 based on the consumer's perceptions about the availability, price, taste, packaging, and versatility.

Table 2. One-Sample t-Test of Consumer Preferences (Test Value = 0.6)

Variable	t	df	Sig. (2-tailed)	Mean Diff.	95% (Lower Upper)	CI -
Easily available in local stores	10.295	80	0.000	1.14074	0.9202 – 1.3612	
Pricing of millet products is affordable	10.853	80	0.000	1.25185	1.0223 – 1.4814	
Often look for millet products when grocery shopping	10.786	80	0.000	1.27654	1.0410 – 1.5121	
Millet products meet expectations in terms of taste	10.638	80	0.000	1.26420	1.0277 – 1.5007	
Millet products are packaged attractively	10.582	80	0.000	1.05432	0.8561 – 1.2526	
Trust quality of locally produced millet products	10.412	80	0.000	1.30123	1.0525 – 1.5499	
Millet-based food products are versatile and easy to cook	10.615	80	0.000	0.96790	0.7864 – 1.1494	

Source: Primary Data

All metrics assessed demonstrated a statistically significant positive mean difference ($p < 0.001$), implying that existing consumers have a favourable opinion of millet-based products regarding local availability, quality trust, taste and cost.

3.3 Ranking Factors Influencing Millet Adoption

The Friedman non-parametric test was utilized to rank the major factors that affect millet products.

Table 3. Friedman Test Mean Ranks & Test Statistics

Factor Influencing Adoption	Mean Rank	Test Parameter	Value
Awareness campaigns and promotions	5.08	N	76
Recommendations from family/friends	4.02	Chi-Square (χ^2)	85.382
Taste and flavor	3.97	df	6
Availability in the market	3.88	Asymp. Sig.	0.000
Packaging and branding	3.84	-	-
Nutritional benefits	3.70	-	-
Price affordability	3.51	-	-

Source: Primary Data

The test was $\chi^2 = 85.382$ ($p = 0.000$), meaning that there were significant differences. External promotion with a mean rank of 5.08 and social recommendation with a mean rank of 4.02 were the key drivers for the adoption of such products by consumers, while intrinsic factors like price and nutritional components were less ranked.

3.4 Discussion

The empirical results reveal that there is a knowledge gap about millets in Palakkad due to age. For younger generations, engagement is necessary, but the older generation still relates to the traditional roles in dietary activities. The gap can be bridged through engaging influencers, educational institutions and through social media initiatives.

Furthermore, the price and nutritional value of products is not the only factor that influences product usage; external factors like communications and referrals also play a significant role. Convenience added value-ready to eat and ready to cook foods- is only a part of the story for food processors and marketers, and their placement in the retail market is just as important, if not more, in establishing positive consumer sentiment and moving it into actual consumption.

4. CONCLUSION

The production and utilization pattern of millets is useful for the study in Palakkad, Kerala. Consumer attitudes towards taste, product quality and health benefits are good, however, uptake is constrained by lack of age-specific knowledge and by the need for active marketing of the product.

The study suggests that the involvement of all the stakeholders in the agricultural co-operatives, food processors, retailers and public policy makers is essential to support regional branding, visibility of retailers and targeted campaigns. By adopting these measures, millets can be mainstreamed in modern diets, thus promoting public health and sustainable agriculture.

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Author Contributions

Teena Thomas: Conceptualization, Methodology, Data Collection, Formal Analysis, Writing – Original Draft.
Dr. K. Parimalakanthi: Supervision, Project Administration, Validation, Writing – Review & Editing.

Conflict of Interest

The authors declare that there is no conflict of interest.

Ethics Statement

Ethical review and approval were not required for this study as it involved non-invasive, anonymous primary survey data collection.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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