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Understanding Consumer Perception And Factors Influencing Consumption Of Millets And Millet-Based Products

Manpreet Kaur¹ and Gagandeep Banga²

¹MBA (AB) School of Business Studies, Punjab Agricultural University, Ludhiana, Punjab-141004
²Professor, School of Business Studies, Punjab Agricultural University, Ludhiana, Punjab-141004
Corresponding author email id: <u>Manpreetkaurravish@gmail.com</u>
Contact number: 6283300795

Abstract

This study was carried out with the aim of studying consumer perception and factors influencing the consumption of millets and millet-based products in Ludhiana city. A descriptive research design was formulated which guided the collection and analysis of data. The population for the study consisted of all consumers in Ludhiana city. A total sample of 200 consumers was selected for the study. Primary data was collected with the help of structured and non-disguised questionnaire. The study results revealed that most of the respondents preferred millets and millet-based products because of their high quality, good nutritional content, and several health benefits. Consumers perceive millet products as high-quality and nutritionally beneficial (mean score 4.01), though awareness of specific benefits like low glycaemic index and gluten-free nature is lower. Factor analysis identifies three key factors influencing consumption: Health and Nutritional Benefits, Cultural Significance and Accessibility, and Brand Influence, explaining 58.35% variance. Quality, health consciousness, and environmental friendliness are top consumption drivers. Cost, unavailability and lack of awareness were identified as the primary constraints.

Keywords: Millets, millet-based products, consumer perception

1. Introduction

India is the largest producer of millets in the world. India, with its diverse agro-climatic zones, has long been a significant producer of millets, contributing substantially to global millet cultivation (FAO, 2019). Some of the commonly grown millets in India are sorghum (*Jowar*), pearl millet (*Bajra*), finger millet (*ragi*), barnyard millet (Jhangora), Proso millet (Barri), foxtail millet (*Kangni*), Kodo millet (Kodra), Little Millet and Pseudo Millets (Buckwheat and Amaranths etc). The three millets that make up the majority of India's overall millet production are Pearl millet (*Bajra*), Sorghum (*Jowar*), and Finger Millet (*Ragi*) (APEDA 2022). All these millets are gluten-free, rich in nutrients, and have many other health benefits. (Devi *et al* 2022). Millets are gaining popularity again due to their outstanding nutritional content, adaptability to various agricultural environments, and potential to support sustainable food systems. Millets are a food with a high nutritional value, are free of gluten and acids, and have nutraceutical qualities. Protein (an important amino acid), micronutrients, and phytochemicals can all be



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found in millets in good amounts. Additionally, it aids in the prevention of diabetes, hyperlipidemia, and other diseases by playing a key role in promoting health (Mishra et al 2021). The increased availability of millet-based production in mainstream supermarkets and online platforms has facilitated their consumption among consumers worldwide (Saleh et al 2019). The quality of millet-based products encompasses various factors such as taste, texture, nutritional content, and safety. Consumers expect high-quality products that meet their sensory preferences and health standards (Sharma et al 2019). Various factors, including taste, nutritional value, availability, convenience, and cultural significance shape consumer perceptions of millets. While some consumers may perceive millets as unfamiliar or traditional grains, others recognize their nutritional richness, gluten free nature, and potential health benefits. Additionally, growing concerns about environmental sustainability and climate change have prompted consumers to seek out more sustainable food options, further driving interest in millets (Prasad et al 2018). In Punjab, millet consumption historically took a backseat to wheat and rice due to agricultural policies and cultural preferences. However, recent trends show a renewed interest in millets like pearl millet (bajra) and finger millet (ragi) due to their nutritional benefits and climate resilience. Punjab's government has initiated programs to promote millet cultivation among farmers, recognizing their potential to diversify crops and improve soil health. Traditional millet-based dishes like bajra roti and ragi malt are gaining popularity in urban areas as people become more health-conscious. (Singh et al 2020). Despite challenges such as water-intensive farming practices, the shift towards millet consumption in Punjab signifies a broader movement towards sustainable and nutritious food choices in the region (Singh and Singh 2018).

2. Review of Literature

Shadang and Jaganathan (2017) identified the factors influencing the consumption of millets and the purchasing behaviour of millets from supermarkets. Garrett's ranking technique was used to determine the most significant factor influencing the respondents' consumption and purchasing decisions. The results provided insights into the consumption pattern of millets and the factors that drive their purchase from supermarkets. Factors influencing the consumption of millets were health benefits, followed by ease of preparation, taste, and likeness. Factors such as advice from nutritionists, self-awareness about health, and affordability compared to other cereals also played a role in the consumption of millet.

Ramachandran (2019) found that Millets offer benefits in ecological, nutritional, and socio-economic areas. Despite the potential benefits, the overall production of millets in India has increased, but the area dedicated to Minor Millets has fallen. Millet consumption has been associated with reduced occurrence of wheezing and asthma, benefits against breast cancer in postmenopausal women, and cardiovascular health in postmenopausal women the study employed a participatory approach to investigate the millet buying and consumption position among diabetic patients in Tiruchirappalli. He found that Regular consumption of millets is associated with reduced risk of type 2 diabetes, improved cardiovascular health, and reduced occurrence of wheezing and asthma.

George *et al* (2021) opined that consumers are now prioritizing healthy lifestyles, leading to the inclusion of nourishing foods in their diets. Millet is gaining popularity due to its health benefits. Few demographic factors affect millet consumption, apart from income and age. Agricultural departments are implementing policies to increase millet consumption.

Kane-Potaka et al (2021) studied the knowledge and practices of consuming millets in urban areas of



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India, with a focus on seven major cities. They collected primary data on trends, attitudes, and opinions on millet consumption behaviour from 15,522 individuals in seven cities across India with a structured questionnaire and employed descriptive and inferential statistics for data analysis. They found that the largest group of early adopters of millets were individuals with health problems, followed by those wanting to lose weight and those selecting millets for its taste and one of the reasons for not consuming more millets was that it was not eaten at home and not liking the taste and by all this research they give suggestions to company to develop delicious products, providing knowledge on nutritional and health facts, and improving accessibility in urban markets.

Umamageswari *et al* (2022) studied the consumption pattern and expenditure proportion of younger Indians on millet and millet-based products. The study found that the consumption of millet and millet-based products depends on the availability and accessibility of the products.

Mohanraj *et al* (2023) examined that consumer preferences for millet-based value-added products in Northern Tamil Nadu, considering the increasing significance of millets in the region's agriculture and consumer preference towards sustainable Agri-value added food products is increasing and consumers are willing to pay a higher price for such products. It was analyzed that Consumption of millet-based value-added products was influenced by family income, family size, and age, with higher income, larger family size, and older age associated with increased consumption.

Kapoor *et al* (2023) identified two prominent factors associated with household millet consumption: the health benefits and cultural significance of nutri-cereals, as well as the practice of cooking and serving them at home The consumption of millet crops in urban households in Delhi, India, is influenced by factors such as perception of healthiness, cultural significance, and household context. Factors like income and education level do not consistently exhibit significant relationships with millet consumption. The study found that the consumption of nutri-cereals, such as finger millet, foxtail millet, proso millet, barnyard millet, kodo millet, little millet, amaranth, and sorghum, was substantially lower in urban households in Delhi, India, with most nutri-cereals having a consumption rate below 50%. Pearl millet and buckwheat were the exceptions, with higher consumption rates observed.

Reddy et al. (2023) in the Kurnool area of Andhra Pradesh, India, studied the consumption trends of millet and millet-based products. Their research showed that millet consumption was significantly influenced by tradition, health benefits, and medical advice. Social media was also essential for selling products made from millet.

Shah *et al.* (2023) examined the potential opportunities and difficulties faced by millet entrepreneurs. Their study demonstrated how customer tastes are shifting towards sustainable and healthful diets, which opens up new markets for millet-based products. Increased knowledge of millets, a return to traditional cuisines, and educational food labelling are some of the main opportunities that have been identified. Major obstacles, however, were a lack of knowledge, unfamiliarity, preparation difficulties, sensory qualities, cost, mistrust from customers, and lengthier gestational cycles for millets.

Vahini *et al.* (2023) investigated the variables affecting millet intake in both urban and rural families in the Coimbatore area of Tamil Nadu, India. They examined the impact of eleven independent variables on millet consumption using binary logistic regression. According to the study, millet consumption was significantly influenced by age, gender, awareness, flavour perception, and perceived nutritional value. Price, flavour, and health advantages were also found to be significant determinants of millets'



popularity among consumers.

Amrutha *et al.* (2024) investigated household nutritional status and dietary patterns, with a particular emphasis on small millet consumption in both urban and rural settings. According to their research, small millet consumption was higher per capita in rural households than in urban ones.

Waghray *et al* (2024) showed that factors such as health benefits, availability, price, brand, superiority, packaging, and taste play a dominant role in determining the potential sales of millet products. Poor infrastructure, inadequate market access, and low prices offered by millet buyers are limitations that impact farmers' incomes and retailer accessibility.

In this context the study on consumer perception and factor influencing consumption of millets and millets-based products in Ludhiana city of Punjab was under taken with following objectives:

- 1. To study consumer perception towards millets and millet-based products in Ludhiana City
- 2. To analyse the factors influencing the consumption of millets and millet-based products

3. Research Methodology

A descriptive research design was formulated which guided the collection and analysis of data and the survey was done with the help of a structured and non-disguised questionnaire. The present study was restricted to Ludhiana city. The population of the study consisted of all the consumers of millets and millet-based products in Ludhiana city. Those respondents were considered for the study who have consumed millets and millet -based products in past 6 months at the time of study. Ludhiana City is divided into 4 Zones- Zone A, Zone B, Zone C, and Zone D as per the Municipal Corporation, Ludhiana. A list of localities under each zone was procured from the Municipal Corporation, Ludhiana, and one locality was selected from each zone on a random basis and 50 respondents were selected from each locality based on convenience sampling. Thus, a total of 200 respondents were selected for the study. To meet the objectives of the study primary data was collected with the help of a structured and non-disguised questionnaire. Data was collected related to parameters like perception and factors influencing the consumption of millets and millet-based products. Primary data was collected and after that, it was converted into a master table which facilitates tabulation of data in the desired form, and then collected data was processed by using the statistical package for social sciences (SPSS). The percentage, mean score, one sample t-test, ANOVA, factor analysis, Garrett's ranking technique were used for the analysis of collated data.

4. Result and Discussion

4.1 Demographic Profile of the Respondents

The demographic profile of the respondents includes the basic information regarding the respondents. It consists of information on gender, age, educational qualification, family type, family size, annual family income, occupation, etc.



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Particulars	Frequency	Percentage	
		(%)	
Gender	100	5 00/	
Male	100	50%	
Female	100	50%	
Total	200	100%	
Age (in years)	1	1	
<20	22	11%	
21-30	101	50.5%	
31-40	23	11.5%	
41-50	30	15%	
>50	24	12%	
Total	200	100%	
Educational Qualification			
Illiterate	1	0.5%	
Matric (8 th)	7	3.5%	
Intermediate (12 th)	27	13.5%	
Graduation	100	50%	
Postgraduation and above	65	32.5%	
Total	200	100%	
Occupation			
Student	103	51.5%	
Government employee	15	7.5%	
Private employee	27	13.5%	
Homemaker	27	13.5%	
Self-employed	22	11%	
Retired	1	0.5%	
Any other	5	2.5%	
Total	200	100%	
Marital status			
Married	84	42%	
Unmarried	116	58%	
Total	200	100%	
Family structure			
Nuclear	120	60%	
Joint	73	36.5%	
Extended	7	3.5%	
Total	200	100%	
Family size	•	1	
Small (Upto 4)	92	46%	

Table 1 Demographic Profile of the Respondents



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Medium (5-7)	76	38%
Large (8 and above)	32	16%
Total	200	100%
Annual Income: (Rs in Lacs/annum)		
<1	47	23.5%
1-3	28	14%
3-6	50	25%
6-9	39	19.5%
>9	36	18%
Total	200	100%

(Source primary data)

4.2 Perception towards millet and millet-based products

The respondents were asked to rate the following statements regarding consumer perception of millets and their products on scale of 1-5, where 1 stands for strongly disagree and 5 stands for strongly agree.

Table 2: Perception towards millet and millet-based products

		Standard		
Statement	Mean	deviation	t-value	p-value
Wide enough variety of millet-based			4.229*	
products is available in the market	3.29	0.97		0.00
Millets hold importance in my cultural or			9.491*	
regional cuisine	3.65	0.96		0.00
Millet-based products are of high quality and			14.89*	
nutritionally beneficial	4.01	0.96		0.00
Attractive packaging influences purchase			6.919*	
decision for millet-based products	3.51	1.03		0.00
Consumption of millet-based products should			13.735*	
be part of the diet	3.95	0.97		0.00
Millets are a healthy alternative to traditional			13.016*	
grains	3.88	0.95		0.00
Millets are environmentally sustainable	3.85	0.96	12.518*	0.00
Increasing awareness about millets influences			9.415*	
my consumption	3.67	0.99		0.00
Recommendations from friends and family			6.324*	
influenced my decision	3.45	1.01		0.00
Millets address global food security and			10.409*	
nutrition challenges	3.70	0.95		0.00
Millet-based products are affordable	3.22	1.02	2.990	0.003
Millets are gluten-free and suitable for			10.789*	
gluten-intolerant people	3.69	0.9		0.00



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Millets has a low glycemic index, which help			10.102*	
to maintain stable blood sugar levels	3.70	0.97		0.00
Millet-based products increase immunity	3.77	0.87	12.381*	0.00
Brand of millet-based products is more			4.196*	
important to me	3.32	1.08		0.00

*Significant at 1% level of significance

t table (5%) = 1.96 t table (1%) = 2.58

** significant at 5% level of significance

The result of the t-test shows that only one statement i.e. "Millet-based products are affordable" (p= 0.03) was found to be insignificant. All the other statements were significant. Factor analysis was also done in SPSS in order to find out the factor loading about various statements regarding the perception of respondents towards millets-based products. This analysis was used for finding out the principal statements regarding perception about millets-based products.

Kaiser-Meyer-Olkin and Bartlett's test

Table 3 **showed** the diagnostic parameters of factor analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy came out to be 0.922. KMO value of more than 0.5 indicates an adequate sample size for factor analysis.

Table 3: Values for KMO and Bartlett's Test (n=200)

KMO and Bartlett's Test							
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.0.922							
Bartlett's Test of Sphericity	Approx. Chi-Square	1247.901					
	df	105					
	Sig.	< 0.001					

The value of the chi-square for Bartlett's test of sphericity came out to be 1247.901. This was found to be significant with 105 degrees of freedom. The value of KMO and the results of Bartlett's test indicate that the factor analysis could be performed on the given set of data. Results from the factor analysis have been presented in Table 3. For the extraction part of the factors, the Principal Component Analysis and Rotation Method used was Varimax Rotation with Kaiser Normalization.

Table 4: Rotated components Matrix

	Variable	Component			
Variables	Label	1	2	3	
Wide enough variety of millet-based	X1		0.766		
products is available in the market					



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Millets hold importance in my cultural or regional cuisine	X2		0.623	
[Millet-based products are of high quality and nutritionally beneficial]	X3	0.656		
Attractive packaging influences purchase decision for millet-based products	X4			0.619
Consumption of millet-based products should be part of the diet	X5		0.407	
Millets are a healthy alternative to traditional grains	X6	0.693		
Millets are environmentally sustainable	X7	0.595		
Increasing awareness about millets influences my consumption	X8	0.607		
Recommendations from friends and family influenced my decision	X9		0.601	
Millets address global food security and nutrition challenges	X10	0.850		
Millet based products are affordable	X11			0.263
Millets are gluten free and suitable for gluten intolerant people	X12	0.770		
Millets has low glycaemic index, help to maintain stable blood sugar levels	X13	0.789		
Millet-based products increase immunity	X14	0.721		
Brand of millet-based products is more important to me	X15			0.881



Factor Definitions: Three factors were obtained from the Principal Component Analysis. These factors were able to explain 58.35 percent variance in the data. The factor lodgings have been presented in Table 9

Table 5: Factor summary for perception towards millets and millet-based product	ts
(n=200)	

Variable	Statements	Factor	Factor	Variance		
label		Loading	Name	explained		
				by the		
				factors		
				(%)		
X3	[Millet-based products are of high	0.656	Health and	31.240		
	quality and nutritionally beneficial]		Nutritional			
X6	Millets are a healthy alternative to	0.693	Benefits			
	traditional grains					
X7	Millets are environmentally sustainable	0.595				
X8	Increasing awareness about millets	0.607				
	influences my consumption					
X10	Millets address global food security and	0.850				
	nutrition challenges					
X12	Millets are gluten free and suitable for	0.770				
	gluten intolerant people					
X13	Millets has low glycaemic index, help	0.789				
	to maintain stable blood sugar levels					
X14	Millet-based products increase	0.721				
	immunity					
X1	Wide enough variety of millet-based	0.766	Cultural	17.578		
	products is available in the market		Significance			
X2	Millets hold importance in my cultural	0.623	and			
	or regional cuisine		Accessibility			
X5	Consumption of millet-based products	0.407				
	should be part of the diet					
X9	Recommendations from friends and	0.601				
	family influenced my decision					
X4	Attractive packaging influences	0.619	Brand	9.537		
	purchase decision for millet-based		Influence			
	products					
X11	Millet based products are affordable	0.263				
X15	Brand of millet-based products is more	0.881				
	important to me					

Three factors were obtained from the principal component analysis



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1. Health and Nutritional Benefits: This factor explains 31.240 percent of variance. The factor loading of the variables ranged from 0.850 to 0.595. The Eigen value of this factor was 6.527. The variables like "Millets address global food security and nutrition challenges" and "Millets have a low glycaemic index, help to maintain stable blood sugar levels" were major regions in building the perception of the respondents. It also included factors like "Millet-based products are of high quality and nutritionally beneficial", "Millets are a healthy alternative to traditional grains", "Millets are environmentally sustainable", "Increasing awareness about millets influences my consumption", "Millets are gluten-free and suitable for gluten intolerant people" and "Millet-based products increase immunity".

2. Cultural Significance and Accessibility: This factor explains 17.578 percent of variance. The Eigen value of this factor was 1.154. The factor loading of the variables ranged from 0.766 to 0.407. This factor includes four variables namely "Wide enough variety of millet-based products is available in the market", "Millets hold importance in my cultural or regional cuisine", "Recommendations from friends and family influenced my decision" and "Recommendations from friends and family influenced my decision".

3.Brand Influence: This factor explains 9.537 percent of variance The Eigen value of this factor was 1.072. The factor loading of the variables ranged from 0.881 to 0.263. This factor includes three variables namely "Brand of millet-based products is more important to me", "Millet based products are affordable" and "Attractive packaging influences purchase decision for millet-based products".

Name of the Factor	Cronbach' alpha	No. of items
Health and Nutritional Benefits	0.890	8
Cultural Significance and Accessibility	0.713	4
Brand Influence	0.534	3

Table 6: Reliability analysis for extracted factors

Reliability analysis of the extracted factors was conducted after factor analysis and the results shows the overall mean score of extracted factors. It can be seen that the factor "Health and Nutritional Benefits" has the highest mean score 3.78 followed by the mean score of the factor "Cultural Significance and Accessibility" (mean score = 3.58), followed by the mean score of the factor "Brand Influence" (mean score = 3.35).Only one factor i.e. brand influence was found to be insignificant (p value >0.05). All the other extracted factors were significant at 1 percent level.

4.3 Factors influencing the Consumption of millet-based products

Table	7:	Varia	ahle	influ	encing	the	nurchase	of	onsum	ntion	of	millets	and	millet-	based	product
Table	/•	v al 16	int	mmu	unung	unc	purchase	01 (lonsum	puon	UI .	mmets	anu	mmet-	vascu	product

Variable	Mean	Standard	t-value	p-value
		Deviation		
Health consciousness/	4.11	0.93	16.77*	0.00
Nutritional Value				
Environmentally friendly	4.00	0.88	15.94*	0.00



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Quality	4.19	0.83	20.11*	0.00
Price	3.83	0.94	12.54*	0.00
Taste and flavour	3.99	0.96	14.44*	0.00
Traditional or cultural diet	3.78	0.92	11.99*	0.00
Availability	3.99	0.84	16.69*	0.00
Recommendations from	3.91	0.97	13.27*	0.00
health experts				
Convenience	3.95	0.90	14.91*	0.00
Dietary preferences	3.90	0.92	13.77*	0.00
Variety	3.75	0.95	11.14*	0.00
Packaging	3.61	1.00	8.54*	0.00
Labeling	3.59	0.98	8.53*	0.00
Brand value	3.62	1.06	8.24*	0.00
Promotions	3.58	1.14	7.13*	0.00
Appearance	3.80	0.94	12.03*	0.00

*Significant at 1% level of significance

t table (5%) =1.96 t table (1%) =2.58

** significant at 5% level of significance

In relation to the consumption of respondents regarding millets-based products it was found that highest mean score was given to the parameter "quality", followed by variables "Health consciousness/ Nutritional Value", followed by variable "Environmentally friendly".

4.3.1 Variations in variable influencing consumption of millet and millet-based products with respect to Family income

In this section, the variables influencing the consumption of millets and millet-based products were compared with the income of respondents using independent t-test.



Table 8: Association between variables influencing consumption of millets and millets-basedproducts and income of respondents(n=200)

	Income (Rs in Lacs/annum)											
Variables	<1		1-3.		3-6.		6-9.		>9		F-	
v al lables	Mea	S.	Mea	S.	Mea	S.	Mea	S.	Mea	S.	Rati	Р-
	n	D	n	D	n	D	n	D	n	D	0	value
Health												
consciousness/		0.9		0.5		0.8		0.9		1.1		0.00
Nutritional value	4.15	5	4.25	8	3.98	9	4.13	8	4.08	3	0.43	9
Environmentally		0.8		0.8		0.9		0.9		0.7		
friendly	4.06	7	4.21	3	3.88	2	4.03	6	3.86	9	0.93	0.19
		0.7		0.6		0.9		0.8		0.8		0.02
Quality	4.30	5	4.36	2	4.08	2	4.21	9	4.03	8	1.04	1
		0.9		0.8		0.9		0.9		0.9		0.01
Price	3.81	9	3.82	6	3.98	1	3.79	8	3.69	2	0.53	1
Taste and		1.1		0.6		0.9		0.9		0.9		
flavour	3.94	3	3.86	5	4.20	7	4.00	7	3.83	1	0.37	0.02
Traditional or		1.0		0.6		0.8		1.0		0.8		0.00
cultural diet	3.77	3	3.89	8	3.84	9	3.77	6	3.64	3	0.37	8
		0.8		0.5		0.9		1.0		0.6		0.01
Availability	3.91	3	4.18	5	4.06	3	4.00	2	3.83	5	0.85	7
Recommendatio												
ns from health		0.8		0.9		0.8		1.0		1.0		0.01
experts	4.06	7	3.93	0	3.90	9	3.90	9	3.69	9	0.75	5
		0.8		0.8		0.9		0.8		0.8		0.01
Convenience	3.79	3	4.00	6	4.10	9	4.00	9	3.86	9	0.87	7
Dietary		0.7		0.9		0.9		0.9		1.0		0.00
preferences	3.96	8	3.86	3	3.86	5	3.90	9	3.92	2	0.85	2
		0.8		1.0		1.0		0.9		0.8		0.01
Variety	3.91	3	3.54	7	3.74	3	3.79	8	3.64	3	0.86	7
		0.9		0.9		0.8		1.0		0.9		0.00
Packaging	3.49	9	3.68	4	3.68	9	3.56	3	3.64	9	0.29	6
		1.0		0.8		0.8		1.0		1.0		0.02
Labeling	3.38	5	3.79	3	3.64	9	3.69	6	3.53	0	0.98	0
		1.1		1.0		1.0		1.1		0.9		0.00
Brand value	3.47	7	3.64	6	3.64	0	3.74	4	3.64	3	0.38	8
		1.2		1.1		1.0		1.2		1.1		0.01
Promotions	3.38	0	3.64	3	3.74	5	3.54	1	3.58	3	0.63	3
		1.1		0.6		0.8		0.8		0.9		0.02
Appearance	3.53	5	3.82	7	3.90	7	3.84	5	3.97	4	1.41	8



*Significant at 1% level of significance

t table (5%) = 1.96 t table (1%) = 2.58

** significant at 5% level of significance

***Cohen's d (<.15 = trivial, 0.2-0.5 = small, 0.5-0.8= medium, >0.8 = large)

From the above table, it can be seen that "Environmentally friendly" is the only variables that was insignificant at 5 percent level (p value >0.05). there is a significant difference between the rest of the variables influencing the consumption decision and the income of the respondents (p value > 0.05).

The respondents having an income 1-3 lakhs considered "quality" and "nutritional value" to be the most important variable influencing their consumption decision. On the other hand, respondents having an income of 3-6 lakhs found "taste and flavour" and "convenience" to be the most important variables in their consumption decision. Whereas, the respondents having income ranging between 6-9 lakhs and more than 9 lakhs considered "quality" and "health consciousness/nutritional value" to be the most important factor.

4.4 Constraints in Purchase of millets and millet Millet-based Products

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Table 9. Constraints faced b	v respondents in the	nurchase of millets and	millet-based products
Table 7. Constraints facta b	y respondents in the	purchase or miners and	miller based products

Constraints	Rank
Costly	Ι
Unavailability	II
Lack of awareness	III
Limited culinary knowledge	IV
Poor Packaging	V
Poor taste	VI
Less variety	VII
Misconception or myths	VIII

The above table shows the constraints faced by the respondents in purchasing millets and millets-based products. It can be seen that the constraints "Costly" was given rank 1, followed by the constraint "unavailability" with rank 2, followed by the constraint "Lack of awareness" with rank 3, followed by the constraint "Limited culinary knowledge" with rank 4, followed by the constraint "Poor Packaging" with rank 5, followed by the constraint "Poor taste" with rank 6, followed by the constraint "Less variety" with rank 7 and misconception or myths was the lowest constraints.

5. Conclusion

The key perceptions about millets centered around their high quality, nutritional benefits, and suitability as part of a regular diet. Respondents perceive millet-based products as high quality and nutritionally beneficial (mean score of 4.01), with strong beliefs in their health benefits and environmental sustainability. These perceptions drive their inclusion in diets, although awareness of specific benefits like low glycemic index and gluten-free nature is slightly lower. The value of the chi-square for Bartlett's test of sphericity came out to be 1247.901. This was found to be significant with 105 degrees



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of freedom. The value of KMO and the results of Bartlett's test indicate that the factor analysis could be performed on the given set of data. Three factors were obtained from the Principal Component Analysis namely, Health and Nutritional Benefits, Cultural Significance and Accessibility, and Brand Influence. These factors were able to explain a 58.35 percent variance in the data. "Quality", "health consciousness" and "environment friendliness" are the strongest factors for the consumption decisions. Higher-income groups prioritized health and quality while those with lower incomes focused more on taste and convenience. This suggests differentiated marketing strategy might be effective in targeting various income groups. Cost was the primary constraint, followed by the unavailability and lack of awareness. Limited culinary knowledge and poor packaging are also notable barriers. Addressing these issues through better marketing, education, and packaging improvements could enhance consumer adoption.

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