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A comprehensive study on the market potential of superfoods: A consumer awareness, growth and constraint analysis with special reference to millets and mushrooms

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ABSTRACT

The global food system is gradually shifting from calorie-focused consumption towards nutrition- and health-oriented choices, a shift that has fuelled interest in “superfoods” — nutrient-dense foods offering substantial nutritional benefit relative to calories. This paper examines the market potential of superfoods in India, with specific reference to millets and mushrooms, using primary data collected from 120 consumers through a structured questionnaire and secondary production data for 2015–2026. Multiple regression analysis showed that consumer awareness has a strong, statistically significant positive influence on purchase decisions ($R^2 = 0.516$, $p < 0.001$). Demographic analysis revealed a consumer base skewed towards males (70%), respondents above 35 years (44.1%), and graduate-level education (43.4%), drawn fairly evenly across urban, semi-urban and rural areas. Compound annual growth rate (CAGR) analysis indicated modest positive growth in both millet (1.38% per annum) and mushroom (1.29% per annum) production over the study period, though mushroom production was considerably more volatile. Garrett's ranking technique identified perishability and poor supply-chain infrastructure as the most severe constraints to consumption and marketing, ahead of labelling complexity, low awareness and limited product variety. The findings suggest that while consumer interest and production capacity for superfoods are both trending upward, translating this potential into sustained market growth requires parallel investment in cold-chain and storage infrastructure alongside continued consumer education.

Keywords: Superfoods, Millets, Mushrooms, Consumer awareness, Market potential, CAGR, Garrett ranking, Agribusiness

1. Introduction

Consumers worldwide are moving away from food choices driven mainly by taste, price and convenience towards choices shaped by nutritional value, preventive health and overall wellness. This shift has been accelerated by rising incomes, urbanization, greater exposure to digital and social media health content, and growing concern about lifestyle-related illness. “Superfood” has emerged as the popular label for nutrient-dense foods — rich in vitamins, minerals, dietary fibre, protein, antioxidants and other bioactive compounds — even though the term has no formal scientific or regulatory definition. It functions primarily as a marketing and consumer-communication construct that signals high nutritional value relative to a food's calorie content.

India offers a particularly relevant setting for studying this market because it combines a deep base of traditional nutrient-dense crops with rapidly modernizing consumption patterns. Millets — including pearl millet, finger millet, foxtail millet, little millet and sorghum — have long been part of Indian diets, especially in semi-arid and rural regions, and are now being repositioned through modern processing, packaging and branding. Mushrooms, meanwhile, represent an emerging agribusiness opportunity: they deliver protein, fibre, vitamins and minerals while requiring comparatively little land relative to conventional livestock-based protein. Both foods illustrate the central premise of this study — that nutritional value alone does not guarantee market success. Adoption depends on consumer awareness, purchasing habits, income, price sensitivity, product availability, perishability and trust in product information.

The market potential of such foods therefore needs to be assessed jointly from the consumer side (awareness, perception and purchase behaviour) and the supply side (production trends and growth, and the constraints that limit adoption). This study combines both perspectives, using consumer-level survey evidence, a multi-year production growth analysis, and a structured ranking of marketing and consumption constraints.

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1.1 Objectives of the study

1. To analyse purchase decisions and consumer awareness towards health-driven food.
2. To study the demographic factors of consumers using health-driven food.
3. To measure the market potential and growth prospects of health-driven food.
4. To identify the constraints in using health-driven food.

1.2 Hypothesis

H₀: There is no significant growth in market share over the study period.

H₁: There is a significant growth in market share over the study period

2. Review of literature

Prior research provides converging evidence on the drivers and barriers relevant to superfood adoption. On consumer awareness and purchase behaviour, Shirur *et al.* (2015, 2016) found that nutritional quality, dietary variety and fresh availability shaped mushroom purchasing decisions, and proposed a measurement model for mushroom consumer behaviour more broadly. Mishra *et al.* (2020) reported that health consciousness and shopping convenience were key determinants of willingness to pay for health and wellness foods. More recently, Reddy *et al.* (2025) [1] and Kaur *et al.* (2025) [2] documented high awareness and generally positive attitudes towards millet-based products in urban India, but also an intention-behaviour gap in which awareness did not consistently translate into regular purchase.

On demographic influences, Shirur *et al.* (2015) [3] characterized mushroom consumers as predominantly male, educated, middle-aged and from medium-to-high income groups, while a larger multi-city study by Shirur *et al.* (2021), covering over 15,000 respondents, found health concerns, weight management and taste to be leading reasons for millet consumption, alongside a notable gap between being health-conscious and being certain that millets are healthy.

On market potential and growth, Banga *et al.* (2013) [4] and Biswas *et al.* (2024) [5] identified perishability, inadequate transportation and limited processing infrastructure as persistent constraints on mushroom marketing efficiency in Punjab and Uttarakhand respectively, while Pandya *et al.* (2024) [6] concluded that value addition and improved marketing strategies hold considerable potential for expanding the mushroom sector. Tripathi *et al.* (2026) [7] highlighted the growing role of digital marketing and e-commerce in improving market access for mushroom-based agribusinesses.

On constraints, studies on adjacent superfood categories reinforce similar themes: Ashvina Singh (2024) [8] linked microgreens adoption

to income and awareness while noting that low awareness restricts uptake; Avaniśh *et al.* (2023) [9] and Bijla (2026) [10] documented cold-storage, spawn-availability and infrastructural constraints among mushroom growers; and Kritika Rawat (2024) [11] found high price, perishability and low awareness to be the principal barriers to microgreens consumption despite generally favourable consumer attitudes. Collectively, this literature establishes that nutritional appeal alone is insufficient for market development — awareness-building and supply-chain investment consistently emerge as the two levers most frequently cited across superfood categories, forming the basis for the present study's combined consumer- and production-side approach.

3. Research methodology

The study adopted a descriptive and exploratory research design to systematically describe consumer awareness, purchasing behaviour and demographic characteristics, and to assess production growth and constraint severity.

3.1 Data

Primary data were collected from 120 consumers through a structured questionnaire administered via Google Forms, using a convenience sampling method. The instrument covered awareness of health-driven food products, purchase frequency, current and prior-year monthly expenditure, changes in consumption, purchase intention, demographic and socio-economic characteristics, and constraints. Secondary data on millet and mushroom production for 2015–2026 were obtained from published government sources (upag.gov.in) and supplemented with relevant literature.

3.2 Analytical tools

Percentage analysis was used to summarise the demographic and socio-economic profile of respondents.

Simple linear regression ($Y = a + bX + e$) was used to examine the relationship between consumer awareness (X) and purchase-related behaviour (Y).

Compound Annual Growth Rate ($CAGR = [(V_n/V_0)^{(1/n)} - 1] \times 100$) was used to measure the annualised growth of millet and mushroom production over the study period.

Garrett's Ranking Technique was used to convert respondents' rankings of consumption/marketing constraints into comparable per cent-position scores ($\text{Per cent position} = 100 \times (R_{ij} - 0.5) \div N_j$), enabling the constraints to be ordered by mean Garrett score.

4. Results and discussions

Multiple regression analysis ($n = 120$) examined the influence of consumer awareness on purchase decision. The results are summarised in Tables 1 and 2.

Factor	Coefficient	t-Statistic	p-value	Significance
Intercept	3.808	3.955	0.0001	Significant
Consumer awareness	0.573	11.227	2.44×10^{-20}	Significant (1%)

Table 1. Regression of Purchase Decision on Consumer Awareness

Statistic	Value
Multiple R	0.719
R ²	0.516
Adjusted R ²	0.512
Standard Error	1.248
F-value	126.03
Significance F	2.44×10^{-20}
Observations	120

Table 2. Regression Model Summary

Consumer awareness had a positive and highly significant effect on purchase decision ($b = 0.573$, $t = 11.227$, $p < 0.001$). Each one-unit increase in the awareness score was associated with an increase of approximately 0.573 units in the purchase-decision score. The model explained 51.6% of the variation in purchase decision (adjusted R² = 51.2%), indicating that awareness is an important but partial determinant — the remaining variation is likely attributable to price, income, taste, product availability and brand trust, none of which were included in this single-variable model. The finding is consistent with Reddy *et al.* (2025) [1] and Kaur *et al.* (2025) [2], both of whom observed strong awareness but an accompanying gap between awareness and consistent purchasing, and it reinforces the case for treating awareness-building as a necessary but not sufficient condition for market growth.

4.2 Demographic profile of consumers

The demographic and socio-economic profile of the 120 respondents is summarised in Table 3.

Consumers above 35 years formed the largest single age segment (44.1%), though the 20–35 age band collectively accounted for a similar share (48.4%), suggesting that both established and younger health-conscious consumers represent viable market segments. The sample was male-dominated (70%), and 73.4% of respondents held at

least an undergraduate qualification, consistent with Shirur *et al.* (2015) [3], who similarly found mushroom consumers to be predominantly educated. Income distribution skewed towards lower and middle brackets, with 61.7% of respondents earning below ₹75,000 per month, indicating that affordability considerations are likely to matter for a majority of the potential consumer base. Respondents were fairly evenly distributed across rural (36.7%), urban (32.5%) and semi-urban (30.8%) areas, indicating that interest in health-driven foods extends beyond urban centres alone.

Table 3. Demographic and Socio-Economic Profile of Respondents ($n = 120$)

Characteristic	Category	Frequency	Percentage
Age	Below 20 yrs	9	7.5
	20–30 yrs	29	24.2
	31–35 yrs	29	24.2
	Above 35 yrs	53	44.1
Gender	Male	84	70.0
	Female	36	30.0
Education	Up to HSC	28	23.3
	Undergraduate	52	43.4
	Postgraduate	36	30.0
	Other	4	3.3
Income (₹/month)	Below 50,000	39	32.5
	50,000–75,000	35	29.2
	75,001–1,00,000	29	24.2
	Above 1,00,000	17	14.1
Residence	Urban	39	32.5
	Semi-urban	37	30.8
	Rural	44	36.7

4.3 Growth prospects of millets and mushrooms

4.3.1 Millet production

Year	Millet Production (Lakh Tonnes)	Year	Mushroom Production (Lakh Tonnes)
2015	170.76	2015	4,360
2016	145.17	2016	4,410
2017	161.25	2017	4,870
2018	164.36	2018	1,340
2019	137.11	2019	1,820
2020	172.61	2020	2,100
2021	180.21	2021	2,430
2022	160.00	2022	2,800
2023	173.21	2023	3,470
2024	175.72	2024	3,990
2025	185.92	2025	3,990
2026	175.84	2026	4,270

Millet production fluctuated between a low of 137.11 lakh tonnes (2019) and a high of 185.92 lakh tonnes (2025), around a mean of 164.04 lakh tonnes ($SD = 13.77$, $CV = 8.39\%$), indicating comparatively low year-to-year variability. The regression trend line was positive ($b = 0.00595$, $R^2 = 0.308$), and the estimated compound growth rate was 1.38% per annum, significant at the 10% level ($t = 2.112$, $p = 0.068$).

Mushroom production followed a markedly more volatile, U-shaped path: a relatively high plateau in 2015–2017 (peaking at 4,870 lakh

tonnes) was followed by a sharp collapse to 1,340 lakh tonnes in 2018, after which production recovered steadily to 4,270 lakh tonnes by 2026. The mean was 3,159 lakh tonnes with a much higher CV of 38.92%, reflecting this instability. The estimated CAGR was 1.29% per annum; however, the underlying time trend was not statistically significant ($t = 0.355$, $p = 0.732$), meaning the positive growth figure should be read primarily as evidence of a strong post-2018 recovery rather than a statistically reliable long-run upward trend.

Table 4. Millet and Mushroom Production in India, 2015–2026 (Source: upag.gov.in)

Statistic	Millets	Mushrooms
Slope (b)	0.00595	0.00557
R^2	0.308	0.012
t -statistic	2.112	0.355
p -value	0.068	0.732
CAGR (%)	1.38	1.29
Trend significance	Significant at 10%	Not significant

Table 5. Growth-Rate (CAGR) Statistics for Millets and Mushrooms, 2015–2026

Taken together, both commodities show positive average growth, but the underlying reliability of that growth differs sharply: millet production is growing steadily off a relatively stable base, while mushroom production is recovering strongly but from a highly volatile base. On this evidence, the null hypothesis of no significant growth (H_0) can be rejected for millets at the 10% level, while for mushrooms the result is inconclusive on the trend test despite a positive average CAGR — underscoring the practical importance of production stabilisation.

4.4 Constraints using health driven food

Garrett's Ranking Technique was used to rank five constraints identified by respondents in the consumption and marketing of health-driven food products. Results are presented in Table 6.

Table 6. Garrett Ranking of Constraints in Consumption/Marketing of Health-Driven Food

Rank	Constraint	Garrett Score
I	Perishability / short shelf life	166.5
II	Poor supply chain and limited availability	154.4
III	Difficulty understanding nutrition labels and ingredients	124.1
IV	Lack of awareness about health-driven food	109.8
V	Limited variety of product options available	109.2

Perishability emerged as the most severe constraint (Garrett score 166.5), with 56 of 120 respondents ranking it first, followed closely by poor supply-chain infrastructure (154.4). Together these two operational constraints substantially outweighed the awareness-related constraints — difficulty interpreting nutrition labels (124.1), lack of awareness (109.8) and limited product variety (109.2) — in perceived severity. This ordering is consistent with the mushroom-specific findings of Banga *et al.* (2013) [4], Biswas *et al.* (2024) [5] and Avaniash *et al.* (2023) [9], all of whom identified perishability, storage and transportation as the dominant constraints on the marketing side, and suggests that infrastructural investment (cold-chain, storage, packaging) is likely to yield a larger marginal improvement in market development than awareness campaigns alone, even though the regression results in Section 4.1 confirm that awareness remains an important driver of purchase decisions.

5. Conclusions and suggestions

This study set out to assess the market potential of superfoods in India, with particular reference to millets and mushrooms, by combining consumer-level survey evidence with production-growth and constraint analysis. Four findings stand out. First, consumer awareness has a strong, statistically significant positive relationship with purchase decisions, explaining just over half of the variation observed, which confirms that awareness-building remains a meaningful lever for market growth even though other unmeasured factors — price, taste, income and availability — evidently also matter. Second, the consumer base for health-driven foods is demographically broad: while skewed towards male, more-educated and older (35+) consumers, meaningful segments exist across younger age groups, all three income brackets and all three residence types, indicating room for differentiated rather than one-size-fits-all marketing. Third, both millet and mushroom production show positive average annual growth (1.38% and 1.29% respectively) over 2015–2026, though millet's growth trend is statistically more reliable, while mushroom production remains considerably more volatile despite its strong recent recovery. Fourth, perishability and poor supply-chain infrastructure are, by a clear margin, the most severe constraints perceived by consumers — ahead of labelling complexity, low awareness and limited variety — indicating that operational and logistical barriers currently outweigh purely informational one

References

- Reddy NP, Prem G, Vaishnavi B, Pavan V. Consumer awareness and attitude toward millet-based processed foods in urban India. *International Journal of Agriculture Extension and Social Development*. 2025.
- Kaur M, Banga G. Consumer awareness and behavioural trends in the adoption of millets and millet-based products. *Archives of Current Research International*. 2025;25(3):135–144.
- Shirur M, Ahlawat OP, Manikandan K. Mushroom consumption and purchasing behaviour in India: A study among selected respondents. *Mushroom Research*. 2015;23(2):225–231.
- Banga G, Kumar B, Singh R. Marketing practices of mushroom growers in Punjab. *Mushroom Research*. 2013;22(2).
- Biswas P, Dev C, Chavan SD, Ali SA, Prajapati SK. Marketing and supply chain analysis of mushroom production in Udham Singh Nagar District of Uttarakhand, India. *Journal of Experimental Agriculture International*. 2024;46(12):785–792.
- Pandya MR, Vahoniya DR, Rajwadi A. Holistic review on mushroom: A perspective on production, economics, marketing and constraints in India. *Asian Journal of Agricultural Extension, Economics & Sociology*. 2024.
- Tripathi P, Sadangi B, Sheshagiri B. Role of digital marketing in enhancing sales of mushroom-based agribusinesses. *International Journal of Research in Agronomy*. 2026.
- Singh A. Consumer acceptance and purchase behaviour toward microgreens. *Journal of Consumer Studies and Food Research*. 2024;9(1):78–89.
- Avaniash, Noel AS. Constraints and suggestions regarding supply chain of mushroom cultivation in Dehradun District of Uttarakhand, India. *Asian Journal of Advances in Agricultural Research*. 2023.
- Bijla S. Breaking the mold: Analyzing key constraints faced by mushroom growers in Northern India. *Mushroom Research*. 2026.
- Rawat K. Consumer acceptance of microgreens: Health perception and constraints. *Journal of Food Science and Nutrition*. 2024.
- Ali T, Ali J. Factors affecting the consumers' willingness to pay for health and wellness food products. *Journal of Agriculture and Food Research*. 2020.
- Fnu M. Global market trends and consumer perception of microgreens: Growth prospects and challenges. *International Journal of Food and Agricultural Marketing*. 2025;12(2):45–60.
- Gautam AK, Singh P, Mishra D, Kumar A, Singh AP. Constraints in adoption of mushroom production enterprise. *Indian Journal of Extension Education*. 2014;50(1–2):39–41.
- Kumar S, Chand G, Patel DK, Akhtar MN, Singh U. Analysis of constraints in adoption of mushroom cultivation in Bihar. *Indian Journal of Extension Education*. 2018;54(3):111–114.
- Shirur M, Shivalingegowda NS, Chandregowda MJ, Preethi. Mushroom consumer behaviour: Dimensions and measurement model. *Mushroom Research*. 2016;24(1).

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