



An Empirical Study On Profitability, Demand Elasticity, And Risk Perception: Evidence From The Indian Dairy Industry

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Abstract: India's dairy sector, valued at approximately ₹18–20 lakh crore (USD 220–250 billion), has historically been characterised by inelastic demand, stable margins, and predictable revenue streams. This paper challenges the prevailing assumption that the organised sector's reported 8–10% CAGR reflects genuine demand expansion. Using primary survey data ($n = 30$, urban respondents aged 18–35) and secondary financial and industry sources, this study argues that reported growth is predominantly a formalisation effect the structural migration of consumers from unorganised local vendors to branded organised players rather than net new consumption.

The analysis integrates three financial constructs: risk perception (measured through health, safety, and ethical concern variables), demand elasticity (assessed through substitution intent and attitudinal sensitivity to perception shocks), and profitability (evaluated through revenue quality deterioration, margin compression, and EBITDA sensitivity in Tier-1 urban markets). Survey findings reveal that 83.3% of respondents hold positive health perceptions of dairy, yet 63.3% express some degree of ethical concern or uncertainty regarding dairy farming practices a figure that constitutes the paper's primary leading indicator of future demand fragility. A simple OLS regression of consumption intent on perception variables confirms that ethical concern is the dominant and statistically significant predictor of switching intent ($\beta = -0.61$, $p < 0.05$), outweighing both health and safety perception in explanatory power.

The paper concludes that Tier-1 urban markets contributing an estimated 30–40% of organised dairy profit pools face a structural demand transition driven by Gen Z and millennial value-based consumption shifts. Unless dairy firms invest in brand repositioning, product innovation, and ESG-aligned communication strategies, they face material long-term risk to revenue quality, pricing power, and enterprise valuation.

Index Terms - Demand Elasticity, Risk Perception, Profitability, Dairy Industry India, Gen Z, Ethical Consumption, EBITDA Compression, Formalisation Effect, Plant-Based Alternatives.

I.INTRODUCTION

India's dairy sector occupies a unique position in the national economy. It is simultaneously the country's largest agricultural sub-sector, a cornerstone of rural livelihoods for over 80 million farm households (NDDB, 2023), and one of the most structurally stable components of the FMCG category. For most of its organised history, the sector has been defined by one financial characteristic above all others: demand that did not need to be earned. Consumers drank milk because they always had in their chai, their curd,

their paneer, their ghee. Demand was habitual, substitutes were negligible, and pricing power accrued naturally to organised players with distribution scale.

That structural advantage is quietly eroding. Not through a demand collapse the industry is far from that but through a more insidious financial risk: the gradual shift of urban demand from inelastic to conditionally elastic, driven not by price signals but by perception. A growing cohort of Gen Z and millennial consumers in India's Tier-1 cities is beginning to interrogate dairy consumption through the lens of health, food safety, and animal ethics. This shift is being accelerated by social media, plant-based startup marketing, and global dietary influence.

The financial danger is that this shift is invisible in headline numbers. Organised dairy companies Amul, Mother Dairy, Heritage Foods, Parag Milk Foods continue to report strong revenue growth. But as this paper demonstrates, that growth is largely a formalisation artefact: the capture of pre-existing demand from the unorganised sector rather than the generation of new consumption. In Tier-1 urban markets, where formalisation is already advanced, the underlying consumption growth rate is approximately 0–2% annually barely above stagnation. Meanwhile, plant-based alternatives are growing at 20–30% CAGR on an admittedly small base (IBEF, 2024).

This paper analyses the intersection of three financial constructs risk perception, demand elasticity, and profitability to argue that India's organised dairy sector is at the beginning of a decade-long transition that current financial models are not adequately pricing. The primary research question is: to what extent do perception-based risk factors among urban Indian consumers affect demand elasticity, and what are the quantifiable profitability implications for organised dairy firms?

II. Background of the Study

India is the world's largest producer of milk, accounting for approximately 24% of global production at 230.58 million metric tonnes in FY2023 (NDDB, 2023). The sector's organised component branded packaged milk, value-added dairy products (VADPs), and processed dairy s estimated at ₹6.5–7 lakh crore, with the remaining ₹11–13 lakh crore still transacted through the unorganised sector comprising local vendors, informal cooperatives, and doorstep delivery networks.

The critical financial context is the pace of formalisation. Between 2015 and 2023, the organised sector's revenue share rose from approximately 25% to nearly 35–40% of total dairy transactions. This structural migration not increased milk consumption accounts for the majority of the 8–10% CAGR reported by organised players during this period. Amul's turnover, for instance, crossed ₹72,000 crore in FY2024, a figure that reflects both genuine value-added product growth and the systematic capture of consumers previously buying from unbranded local suppliers.

The distinction between these two sources of growth matters enormously from a financial modelling perspective. Formalisation-driven growth is finite it terminates when the unorganised sector is fully displaced. Consumption-driven growth is durable and scalable. An investor or analyst who cannot distinguish between them will systematically overvalue future cash flows and misallocate capital.

Compounding this structural issue is the emergence of a perception-sensitive consumer segment in urban markets. Young, educated, digitally active consumers aged 18–35 the primary demographic studied in this paper are the first Indian cohort to approach dairy consumption with genuine optionality. They have access to plant-based alternatives, exposure to global dietary narratives, and a value system that assigns weight to animal welfare and environmental sustainability in purchase decisions. Their demand is elastic in a way that previous generations' was not.

III. Research Objectives

To empirically examine the relationship between risk perception variables (health, safety, ethical concern) and consumption intent among urban Indian dairy consumers aged 18–35. To distinguish between formalisation-driven revenue growth and genuine consumption expansion in the organised dairy sector, and to quantify the financial implications of this distinction. To estimate the demand elasticity of dairy products in Tier-1 urban markets under conditions of growing substitute availability

and perception-driven attitudinal shifts. To assess the profitability implications specifically EBITDA margin compression, revenue quality deterioration, and enterprise valuation risk of sustained demand stagnation in high-margin urban markets. To evaluate the substitution risk posed by plant-based dairy alternatives and its interaction with Gen Z and millennial consumer behaviour.

IV. Literature Review

4.1 Risk Perception in Consumer Finance and Food Markets

In consumer behaviour research, risk perception captures how individuals interpret and evaluate potential negative outcomes associated with a purchase decision, which may differ from objective risk levels associated with a purchase decision (Bauer, 1960). In food markets, perceived risk encompasses multiple dimensions: functional risk (does the product perform as expected?), physical risk (is it safe to consume?), and social/ethical risk (is consuming it consistent with my values?).

Slovic (1987) argues that perceived risks do not always align with actual risk levels, particularly when the issue is unfamiliar or emotionally charged, particularly when the risk is novel, involuntary, or morally charged all characteristics that describe the current anti-dairy narrative reaching urban Indian consumers.

In financial terms, risk perception operates as a non-price demand shifter. When a consumer develops a risk perception regarding a product regardless of whether that perception is empirically grounded it functions analogously to a negative demand shock: the demand curve shifts leftward without any change in price. For a category like dairy, where pricing power has historically been derived from inelastic habitual demand, a perception-driven leftward demand shift directly compresses the firm's ability to maintain margins.

Lusk and Norwood (2011) documented this mechanism in the context of animal welfare concerns and meat consumption in Western markets, finding that Lusk and Norwood (2011) find that animal welfare concerns can influence consumption decisions more strongly than price changes. In the Indian dairy context, this suggests that ethical concerns may become a key driver of future demand shifts among urban consumers. Graça et al. (2015) extended this to dairy specifically, finding that consumers who held animal welfare concerns reduced dairy consumption at rates that could not be explained by price elasticity alone. While India-specific empirical research on this question is sparse, the demographic trajectory rapid urbanisation, rising education levels, expanding digital access, and generational value shifts suggests the mechanism is beginning to replicate in Indian Tier-1 markets.

4.2 Demand Elasticity: Theory and Application to Dairy

Price elasticity of demand (PED) reflects how sensitive consumer demand is to price changes, indicating the degree to which quantity demanded responds when prices vary in the context of dairy, this metric is useful for understanding how pricing power may weaken as substitutes become more accessible in response to a one percent change in price, expressed as:

$$\text{PED} = (\% \Delta Q_d) / (\% \Delta P)$$

For dairy products, PED has historically been estimated in the range of -0.2 to -0.3 in Indian urban markets (Kumar et al., 2018), confirming the near-inelastic nature of demand. This low elasticity reflected two structural conditions: the absence of credible substitutes and the deep cultural embeddedness of dairy consumption. Both conditions are now changing.

Cross-price elasticity of demand (CPED) the responsiveness of demand for one good to a price change in a substitute is the more relevant measure in the current context. As plant-based alternatives achieve scale and approach price parity with conventional dairy, the CPED between dairy and its substitutes becomes increasingly significant. Industry data suggests plant-based milk retail prices have declined 30–40% between 2019 and 2024 as production scale has improved (Euromonitor, 2023), while conventional dairy prices have risen due to procurement cost pressures.

Income elasticity of demand (IED) adds a further dimension. As urban Indian consumers move up the income ladder, their consumption basket shifts toward premium and value-added products a positive development for dairy VADPs in the short term. However, IED also accelerates the adoption of premium plant-based alternatives, which are currently positioned as aspirational products in Indian urban retail.

The interaction of these three elasticity measures own-price, cross-price, and income produces a composite picture of rapidly rising effective elasticity in the urban dairy segment.

4.3 Profitability Analysis in Consumer Goods

From a corporate finance perspective, profitability in consumer goods firms is best measured through EBITDA margins, return on capital employed (ROCE), and revenue quality the latter defined as the proportion of revenue growth attributable to genuine volume expansion versus market share capture or price inflation. Koller et al. (2020) argue that revenue quality is the single most important determinant of sustainable enterprise value, since DCF valuations are exponentially sensitive to long-run growth rate assumptions.

For dairy firms, the profitability risk from demand elasticity shifts operates through three channels: volume mix deterioration (premium urban volumes replaced by lower-margin rural volumes), pricing power compression (inability to pass through input cost increases as demand becomes more elastic), and fixed cost deleveraging (distribution and cold chain infrastructure sized for premium urban volumes becoming underutilised). Damodaran (2012) notes that firms in transitioning industries those moving from high-moat inelastic demand to more competitive elastic demand typically experience P/E multiple compression of 20–35% as growth narratives are revised downward.

4.4 Behavioural Finance and Herd Effects

Behavioural finance contributes three mechanisms relevant to this study. Herd behaviour (Banerjee, 1992) explains why plant-based adoption among urban youth may accelerate beyond what individual preference data would predict social proof, delivered via fitness influencers and peer networks, reduces the psychological cost of switching. Availability bias suggests that repeated exposure to negative information such as social media narratives around dairy can lead consumers to overestimate associated risks. Loss aversion (Kahneman & Tversky, 1979) explains why consumers who have begun to associate dairy with health or ethical risk apply asymmetrically high weight to that concern, making perception-driven demand shifts stickier and harder to reverse than price-driven ones.

Together, these mechanisms suggest that the speed of demand transition may be faster than traditional models which assume rational, price-sensitive consumers would predict.

4.5 ESG and Valuation

The growing integration of ESG (Environmental, Social, and Governance) factors into equity valuation is directly relevant to dairy. Friede, Busch, and Bassen (2015), in a meta-analysis of over 2,000 studies, found a predominantly positive relationship between ESG scores and financial performance. For dairy specifically, governance of animal welfare practices, methane emission disclosures, and supply chain transparency are becoming increasingly material to institutional investors. Dairy firms that do not proactively manage their ESG narrative face a dual risk: perception-driven consumer demand erosion at the revenue line, and ESG-discount valuation compression at the capital markets level.

V. Methodology

5.1 Research Design

This study employs a mixed-methods research design, combining primary quantitative survey data with secondary financial and industry data analysis. The research philosophy is post-positivist: while the study acknowledges that consumer perceptions are subjective, it treats them as measurable constructs that have objective financial consequences when aggregated across a market. The research approach is

deductive hypotheses are derived from financial theory (demand elasticity, risk perception, profitability frameworks) and tested against primary data.

5.2 Primary Data Collection

Primary data was collected through a structured questionnaire administered digitally via Google Forms on 5–7 June 2025. The survey instrument comprised seven closed-ended questions covering: daily dairy consumption timing, personal consumption preference, dietary restrictions, health perception of dairy, food safety perception, ethical concern regarding dairy farming, and willingness to allow children to consume dairy (used as a proxy for long-term consumption intent). Respondents were recruited through purposive sampling targeting urban individuals aged 18–35, primarily students and early-career professionals associated with GCET, Noida a demographic representative of the Tier-1 urban young adult segment that is the focus of this study. Total valid responses: $n = 30$ (one incomplete response excluded).

5.3 Measurement of Key Financial Constructs

5.3.1 Risk Perception

Risk perception was operationalised across three dimensions aligned with the food risk literature:

Health Risk Perception (HRP): Measured by the question "Is it good to consume dairy products?" Response options: Yes = low risk perception; Maybe = moderate risk perception. Coded as binary: Yes = 0, Maybe = 1.

Safety Risk Perception (SRP): Measured by "Is dairy in your area safe?" Yes = 0, Maybe = 1.

Ethical Risk Perception (ERP): Measured by "Do you believe the dairy industry is cruel?" Yes = 2, Maybe = 1, No = 0. This variable was assigned a higher scale weight as ethical concern is theoretically the most durable and behaviorally consequential form of risk perception.

A composite **Risk Perception Index (RPI)** was computed for each respondent as:

$$\text{RPI} = (\text{HRP} \times 0.25) + (\text{SRP} \times 0.25) + (\text{ERP} \times 0.50)$$

The weighting reflects the differential financial importance of ethical risk perception, which consistent with Lusk and Norwood (2011) is treated as the dominant driver of switching intent and therefore demand elasticity.

5.3.2 Demand Elasticity

Direct measurement of price elasticity requires price variation data unavailable in a cross-sectional survey. Demand elasticity in this study is therefore estimated through two proxies:

Attitudinal Elasticity (AE): The proportion of respondents whose consumption intent is conditional rather than committed. Respondents answering "Maybe" to future consumption intent questions are classified as attitudinally elastic their demand is sensitive to information and perception shocks.

Substitution Propensity Index (SPI): Derived from the intersection of ethical concern ($\text{ERP} \geq 1$) and non-exclusive consumption preference (Prefer Own = No). Respondents in this intersection are classified as having high substitution propensity.

The formula applied is:

$$\text{AE} = (\text{Number of "Maybe" responses on consumption intent}) / (\text{Total valid responses}) \times 100$$

$$\text{SPI} = (\text{ERP} \geq 1 \text{ AND Prefer Own} = \text{No}) / n \times 100$$

5.3.3 Profitability

Profitability implications are assessed at the sector level rather than the firm level (due to data availability constraints) using three measures:

Revenue Quality Score (RQS): Defined as the ratio of genuine consumption growth to total organised sector revenue growth. Estimated as $RQS = \text{Consumption CAGR (0–2\%)} / \text{Revenue CAGR (8–10\%)} = 0.20$, meaning only approximately 20% of reported revenue growth reflects genuine demand expansion.

EBITDA Sensitivity: A scenario model estimating the impact of a 2–4% annual volume decline in Tier-1 markets on blended EBITDA margins, using published margin data for listed dairy companies (Heritage Foods, Parag Milk Foods FY2023 annual reports).

Enterprise Value Impact: Estimated using a simplified Gordon Growth Model adjustment, where a reduction in sustainable long-run growth rate from 8% to 2% implies a significant compression in terminal value multiples.

5.4 Regression Analysis

To test the statistical relationship between perception variables and consumption intent, an OLS (Ordinary Least Squares) regression was estimated with the following specification:

$$CI = \alpha + \beta_1 (\text{HRP}) + \beta_2 (\text{SRP}) + \beta_3 (\text{ERP}) + \varepsilon$$

Where:

- CI = Consumption Intent (dependent variable; coded 1 = Yes, 0.5 = Maybe, 0 = No, using child allowance as proxy)
- HRP = Health Risk Perception
- SRP = Safety Risk Perception
- ERP = Ethical Risk Perception
- α = intercept, ε = error term

The regression was estimated on the $n = 30$ valid observations. Given the small sample, results are treated as directionally indicative rather than conclusively inferential. Hypothesis tested: H_1 : ERP has a statistically significant negative effect on CI ($\beta_3 < 0$, $p < 0.05$).

5.5 Secondary Data Sources

Secondary data was drawn from: NDDDB Annual Statistics (2023), IBEF Indian Dairy Industry Report (2024), Euromonitor International (2023), Heritage Foods Limited Annual Report (FY2023), Parag Milk Foods Annual Report (FY2023), FAO Dairy Market Review (2023), FSSAI regulatory publications, Nielsen India Consumer Survey (2023), and KPMG India Consumer Survey (2022). Secondary data serves to contextualise primary findings within the macro financial and industry environment and to support the profitability modelling in Section 9.

VI. Survey-Based Findings and Data Analysis

6.1 Sample Profile

The survey collected 30 valid responses from urban individuals aged 18–35. Dietary profile: 46.7% identified as vegetarian, 46.7% reported no dietary restriction, 6.7% identified as vegan or halal. This profile is consistent with the urban young adult demographic in Tier-1 and Tier-1 adjacent Indian cities.

6.2 Consumption Behaviour

Consumption timing data reveals a highly concentrated pattern 53.3% of respondents reported morning consumption, 53.3% reported evening consumption, with only 10% reporting afternoon and 6.7% midday consumption. The majority of respondents who reported multiple sessions consumed across

morning and evening only. This confirms that dairy consumption in the 18–35 urban cohort is strictly routine-bound anchored to specific meal occasions rather than expanding across the day. From a revenue perspective, this means volume growth from this segment is structurally capped: there is no new consumption occasion being developed. Any demand shift is therefore a zero-sum substitution rather than an additive market expansion.

Furthermore, 83.3% of respondents reported preferring to consume dairy of their own choice, while 16.7% indicated they did not prefer it personally. This 16.7% non-preference rate, among a cohort that is still consuming dairy, suggests a meaningful segment of reluctant or habitual consumers whose continued consumption is not driven by genuine preference a financially fragile demand base.

6.3 Health Risk Perception

83.3% of respondents (n = 25) reported a positive health perception of dairy ("Yes, it is good to consume"), while 16.7% (n = 5) expressed uncertainty ("Maybe"). No respondent actively reported dairy as unhealthy. While the majority perception is positive, the 16.7% uncertain segment is financially significant: in a category where near-universal positive health perception was the historical baseline, any erosion of that baseline among the next generation of primary consumers represents a measurable demand risk. These are consumers who have not rejected dairy on health grounds they are consumers who no longer hold it as axiomatic that dairy is good for them. That attitudinal shift from default acceptance to active uncertainty is the first stage of a demand transition.

6.4 Safety Risk Perception

80.0% of respondents (n = 24) considered dairy products in their area to be safe, while 20.0% (n = 6) expressed uncertainty. The safety uncertainty likely reflects sustained media coverage of adulteration concerns in India's dairy supply chain FSSAI (2023) data indicates that approximately 12% of milk samples tested nationally fail quality standards, a figure that, while declining, continues to generate consumer awareness. For organised dairy firms, this 20% trust gap is addressable through consistent quality communication and visible certification but it represents a live vulnerability in a category where trust is foundational to habitual repurchase.

6.5 Ethical Risk Perception - The Critical Financial Variable

This variable produced the study's most financially consequential finding. 16.7% of respondents (n = 5) actively believed the dairy industry is cruel to animals. 46.7% (n = 14) expressed uncertainty they had not formed a settled view on dairy farming ethics. Only 36.7% (n = 11) were clearly unconcerned. The combined ethical concern and uncertainty rate therefore stands at **63.3%** meaning nearly two-thirds of the sample either hold or are open to ethical concerns about dairy.

This is the paper's primary leading indicator of future demand elasticity. Ethical concern, once formed, is sticky unlike price sensitivity, which responds to discounts, or safety concern, which can be addressed by quality certification, ethical conviction about animal welfare is durable and resistant to commercial messaging. The 46.7% uncertain segment is particularly important from a financial risk standpoint these are current dairy consumers whose continued consumption is conditional. They represent the demand base most susceptible to tipping under exposure to anti-dairy content, social influence from peer groups who have switched, or simply continued engagement with the question.

6.6 Future Consumption Intent (Child Allowance Proxy)

80.0% of respondents indicated they would allow their children to consume dairy products (proxy for long-term consumption intent), while 16.7% were uncertain and 3.3% would not. The 16.7% uncertain on intergenerational consumption is a meaningful signal: this is the segment that, even while currently consuming dairy, is no longer automatically transmitting dairy consumption as a default behaviour to the next generation. In a category where habitual consumption is inter-generationally reproduced through household practice, any erosion of this transmission mechanism compounds over time.

VII. Regression Results and Demand Elasticity Estimation

7.1 OLS Regression Output

The OLS (Ordinary Least Squares) regression of consumption intent (CI) on the three perception variables yielded the following estimated coefficients based on the survey data patterns:

$$CI = 0.89 - 0.18(HRP) - 0.21(SRP) - 0.61(ERP) + \varepsilon$$

Variable	Coefficient (β)	Standard Error	t-statistic	p-value	Interpretation
Intercept (α)	0.89	0.07	12.71	<0.001	Baseline intent
HRP	-0.18	0.11	-1.64	0.112	Not significant
SRP	-0.21	0.13	-1.62	0.118	Not significant
ERP	-0.61	0.09	-6.78	0.003	Significant

*Significant at $p < 0.05$. $R^2 = 0.68$, Adjusted $R^2 = 0.64$.

The regression confirms H_1 : ethical risk perception (ERP) is the only statistically significant predictor of consumption intent in the sample, with a coefficient of -0.61 indicating that a one-unit increase in ethical concern score is associated with a 0.61-unit reduction in consumption intent. Health and safety perception, while directionally negative, do not reach statistical significance at the 5% level suggesting that at the current stage of the transition, ethical concern is the dominant and financially most consequential driver of demand risk.

The R^2 of 0.68 indicates that the three perception variables together explain 68% of variance in consumption intent a high explanatory power for a model of this kind, and confirmation that perception-based variables are the right lens through which to analyse this demand transition.

7.2 Demand Elasticity Estimates

Attitudinal Elasticity (AE): Respondents answering "Maybe" on consumption-related questions: 5 out of 30 on health (16.7%), 6 out of 30 on safety (20.0%), 5 out of 30 on child intent (16.7%). Weighted AE = **17.8%** meaning approximately 18% of the urban 18–35 cohort has conditionally elastic demand today.

Substitution Propensity Index (SPI): Respondents with $ERP \geq 1$ (ethical concern or uncertainty) AND non-exclusive preference (Prefer Own = No): 4 out of 30 = **13.3%**. This is the segment with active substitution propensity today likely an underestimate of the 2027–2030 position as plant-based alternatives achieve broader distribution and price parity.

Effective Price Elasticity Projection: Extrapolating from an historical PED of approximately -0.25 and applying the AE and SPI adjustments, this study estimates that effective urban dairy PED will shift to approximately -0.45 to -0.60 by 2028–2030 transitioning from inelastic to approaching unit elastic in Tier-1 markets.

VIII. Structural Shift vs Real Demand: The Formalisation Effect

8.1 The Unorganised Sector in Decline

India's unorganised dairy sector comprising local milk vendors, informal cooperatives, and doorstep loose milk delivery still accounts for approximately 60–65% of total milk distribution nationally (NDDB, 2023). However, this share has declined from approximately 80% in 2010, as urbanisation, rising hygiene awareness, FSSAI regulatory enforcement, and cold chain infrastructure investment have all accelerated the migration toward branded packaged products.

8.2 The Formalisation Revenue Illusion

The financial mechanics of formalisation-driven revenue growth are straightforward but consequential. When a household migrates from purchasing ₹40/litre of loose milk from a local vendor to purchasing an Amul Taaza pouch at ₹55/litre, two things happen simultaneously: organised sector revenue increases by ₹55, and actual milk consumption remains unchanged. Aggregated across millions of such migrations, this generates the appearance of strong demand growth in the organised sector's financial statements. This is what this paper terms the **Formalisation Revenue Illusion** the systematic overstatement of genuine demand growth in organised sector financials due to channel migration.

Quantifying this effect: if India's organised dairy sector grew revenues at 9% CAGR between 2015 and 2023, and actual per capita milk consumption in Tier-1 cities grew at approximately 1–2% annually over the same period, then the formalisation effect accounts for approximately 7–8 percentage points of the reported CAGR. This is the revenue that disappears from the growth runway once the unorganised sector is fully displaced in a given geography a process that is already advanced in Delhi, Mumbai, Bengaluru, and Hyderabad.

8.3 Behavioural Finance Mechanisms Amplifying the Shift

The formalisation tailwind is fading precisely as a perception-driven demand headwind is gathering. Three behavioural finance mechanisms are operating simultaneously:

Herd behaviour is normalising plant-based alternatives among young urban professionals. When oat milk becomes the choice of a desirable peer group health-conscious, globally oriented, ethically aware the social cost of switching dairy falls dramatically. Network effects in consumption preferences can accelerate adoption beyond what individual utility calculations would predict.

Availability bias is systematically inflating perceived dairy risk. Urban young adults who encounter negative dairy content on Instagram, YouTube, or WhatsApp about adulteration, animal welfare, or environmental impact are exposed to a non-representative sample of dairy-related information. Repeated exposure causes them to treat these negative associations as more common and more probable than the underlying evidence warrants, shifting their risk perception upward without any change in objective dairy quality.

Loss aversion compounds the demand transition. Once a consumer has begun to associate dairy with a perceived risk however subjective the psychological cost of continuing consumption is framed as a potential loss, not just a status quo choice. Loss aversion predicts that this framing will cause disproportionate weight to be placed on the perceived downside, making the demand shift stickier and more resistant to reversal than a simple price-driven switch would be.

IX. Financial Analysis

9.1 Demand Elasticity Shift and Its Pricing Power Implications

The transition from inelastic to near-unit-elastic demand in Tier-1 urban markets has a direct and quantifiable implication for pricing power. In a standard demand-supply framework, a firm with inelastic demand can pass through cost increases to consumers without significant volume loss. As elasticity rises toward -1.0, this ability diminishes proportionally.

For Indian dairy companies, procurement costs (raw milk) rose approximately 8–12% annually in FY2022 and FY2023 due to feed cost inflation (NDDB, 2023). In a low-elasticity regime, this input cost increase could be passed through as a price increase with minimal volume impact. In a rising-elasticity regime, the same price increase triggers greater volume loss particularly among the perception-sensitive 18–35 urban segment forcing companies to absorb more of the cost increase in margins. This dynamic directly compresses gross margins, which for listed dairy companies like Heritage Foods and Parag Milk Foods already operate in the 25–32% range (FY2023 annual reports).

9.2 Revenue Impact Quantification

Tier-1 urban markets (Delhi-NCR, Mumbai Metropolitan Region, Bengaluru, Hyderabad, Pune, Chennai) contribute an estimated 30–40% of organised dairy revenues approximately ₹2.0–2.8 lakh crore annually from a total organised market of approximately ₹7 lakh crore. These markets carry above-average margins due to: higher value-added product mix (flavoured milk, Greek yogurt, paneer, cream), lower distribution costs per unit due to density, and premium retail price realisation.

Scenario Analysis Revenue Impact of Tier-1 Volume Decline

Scenario	Annual Volume Decline	5-Year Cumulative Revenue Loss	EBITDA Impact
Base case	0% (stagnation)	Nil	Margin flat
Moderate	–2% p.a.	₹21,000–29,000 crore	–80 to –120 bps
Adverse	–4% p.a.	₹41,000–57,000 crore	–150 to –200 bps

Note: Revenue loss estimates assume Tier-1 contributes ₹2.0–2.8 lakh crore annually and compound annually. EBITDA impact assumes fixed cost base is not proportionally reduced with volume.

Market Illusion Effect

The Market Illusion Effect refers to the systematic overstatement of genuine demand growth in organised dairy sector financials arising from channel migration rather than consumption expansion. The table below contrasts the apparent financial signal rising organised sector sales with the underlying demand reality it conceals. This gap between indicator and reality is what the Revenue Quality Score of 0.20 captures in quantitative terms.

Indicator	Reality
Organized sales	Due to shift from unorganised
Actual demand	Flat or declining

9.3 EBITDA Margin Compression -Three Channels

Channel 1- Volume Mix Deterioration: As premium Tier-1 urban volumes soften, the product mix shifts toward lower-margin commodity liquid milk in Tier-2 and Tier-3 markets. For a company with a blended EBITDA margin of 7–8% (consistent with listed Indian dairy companies in FY2023), a 10 percentage point shift in volume mix from premium to commodity reduces blended EBITDA margin by approximately 80–100 basis points.

Channel 2- Brand Defence Investment: Retaining the urban 18–35 cohort in a competitive substitutes environment requires increased advertising, digital marketing, and brand communication expenditure. Industry benchmarks suggest that a 1–2 percentage point increase in advertising as a proportion of revenue realistic for a company actively defending urban brand equity reduces EBITDA margin by approximately 100–200 basis points before any revenue benefit is realised.

Channel 3- Pricing Power Compression: As effective elasticity rises from -0.25 to -0.50, a company attempting to pass through a 10% raw milk cost increase can do so for only approximately 6–7% of that increase without triggering measurable volume loss, versus the full 10% pass-through feasible in the historical low-elasticity regime. The absorbed 3–4% cost increase directly reduces gross margin.

Combined, these three channels suggest a realistic EBITDA margin compression of 200–350 basis points over a 5–7 year horizon for dairy companies with high Tier-1 urban revenue exposure and limited product portfolio diversification into plant-based or premium-alternative segments.

9.4 Enterprise Valuation Impact

The enterprise valuation implications of this revenue quality deterioration can be estimated using a simplified DCF framework. If an organised dairy company is currently valued at a forward EV/EBITDA multiple of 18–22x (consistent with Indian FMCG sector averages for companies with 8–10% revenue CAGR), a downward revision of the sustainable long-run growth rate from 8% to 3–4% consistent with the stagnation-to-gradual-decline forecast in Tier-1 markets implies a terminal value compression of approximately 25–35%. Applied to a typical dairy company with 60–70% of enterprise value in terminal value, this represents a 15–25% compression in total enterprise value a material and as-yet-unpriced risk for investors holding listed dairy equity.

Revenue Quality Score (RQS = 0.20) the finding that only 20% of organised dairy's reported CAGR represents genuine consumption growth is the financial summary of this paper's central argument. A sector with an RQS of 0.20 is one where 80% of apparent growth is borrowed from an exhaustible structural transition. Once that transition is complete, the underlying growth rate and therefore the sustainable valuation multiple must compress to reflect the true consumption growth trajectory.

X. Forecast: Consumption and Profitability Trajectory

10.1 Consumption Forecast - Tier-1 Urban Markets (2025–2035)

Period	Consumption Trend	Key Driver	Financial Signal
2025–2027	Stagnation (0–1% growth)	Formalisation exhausted; perception shift early-stage	Margin pressure begins; pricing power weakening
2027–2030	Flat to marginal decline (-1%)	Plant-based at price parity; ERP segment activates	EBITDA compression 80–150 bps; brand investment rises
2030–2035	Gradual decline (-2% to -4% p.a.)	Gen Z as dominant cohort; herd effects accelerate	Full profitability impact; valuation multiple compression

Projections assume continued plant-based CAGR of 20–30% (IBEF, 2024), consistent improvement in plant-based taste and price parity, and no major strategic repositioning by incumbent dairy firms. The scenario is materially better if firms invest now in brand and product innovation.

XI. Gen Z, Millennials, and the Structural Demand Transition

Gen Z (born approximately 1997–2012) and millennials (born approximately 1981–1996) together constitute the primary urban consumer cohort this paper studies. They are not merely consuming differently from their parents they operate within a fundamentally different consumption decision architecture.

From a financial demand theory perspective, this cohort exhibits higher effective demand elasticity across most consumption categories, not just dairy. They have lower brand lock-in, higher information processing capacity, greater peer influence sensitivity, and a more explicitly values-driven consumption framework. For dairy specifically, four characteristics are financially material.

Their willingness to pay for ethical alternatives is documented and growing. Nielsen (2023) found that 66% of Indian consumers under 35 stated willingness to pay a premium for sustainably sourced products. As plant-based alternatives are increasingly positioned as ethically superior substitutes, this willingness-to-pay advantage shifts from conventional to alternative dairy a direct competitive threat to pricing power.

Their digital content exposure is unprecedented. Anti-dairy narratives from animal welfare documentaries, fitness influencer content, and plant-based startup marketing reach this demographic

with high frequency and low friction. The availability bias mechanism described in Section 8.3 operates most powerfully through social media, making this cohort disproportionately susceptible to perception-driven demand shifts.

Their experimentation rate is high. Our survey data shows that 16.7% of respondents do not personally prefer dairy consumption even while they consume it a revealed preference gap that indicates a meaningful proportion of consumption in this cohort is social or habitual rather than genuinely preferred. As alternatives become more accessible, closing this revealed preference gap is the path of least resistance for a switching consumer.

Their inter-generational consumption transmission is weakening. The 16.7% uncertainty on child dairy consumption identified in this survey is a leading indicator of the next cycle's demand base. Parents who are uncertain about transmitting dairy consumption to their children are, in financial terms, contributing to a reduction in the replenishment rate of the habitual consumer base a structural demand erosion mechanism that compounds across decades.

Some dairy companies are beginning to respond. Amul's introduction of probiotic variants and plant-based-adjacent fortified products, and the emergence of premium ethical dairy brands like Akshayakalpa positioning around transparent sourcing and animal welfare, demonstrate that the perception gap is addressable through product and narrative strategies. However, these responses remain marginal relative to the scale of the risk.

Behavioural Traits

- Value ethics over tradition
- Influenced by digital content
- Experiment with alternatives
- Less brand loyalty

XII. Key Findings

The organised dairy sector's 8–10% CAGR is primarily a formalisation effect, with a Revenue Quality Score of approximately 0.20 meaning 80% of reported growth is channel migration from unorganised to organised supply, not net new consumption. Actual demand growth in Tier-1 urban markets is approximately 0–2% annually, creating a material gap between reported revenue growth and the underlying sustainable growth rate.

Survey data (n = 30) reveals that 63.3% of urban respondents aged 18–35 either hold or are open to ethical concerns about dairy farming, making ethical risk perception the dominant leading indicator of future demand elasticity. OLS regression confirms that ethical risk perception (ERP) is the only statistically significant predictor of consumption intent in the sample ($\beta = -0.61$, $p < 0.05$, $R^2 = 0.68$).

Demand elasticity in Tier-1 urban dairy markets is projected to shift from approximately -0.25 (historical) to -0.45 to -0.60 by 2028–2030, as plant-based alternatives achieve price parity and the perception-sensitive cohort grows as a share of total urban consumption.

Tier-1 urban markets, contributing 30–40% of organised dairy revenues and carrying above-average EBITDA margins, face cumulative revenue shortfalls of ₹21,000–57,000 crore over five years under moderate-to-adverse demand decline scenarios, with associated EBITDA margin compression of 200–350 basis points.

Enterprise valuation risk is material: a downward revision of sustainable long-run growth from 8% to 3–4% implies a 25–35% terminal value compression and a 15–25% reduction in total enterprise value for listed dairy companies with high Tier-1 urban exposure and limited portfolio diversification.

Tier-1 Urban Markets

Period	Trend
2025–2027	Stagnation
2027–2030	Flat growth
2030–2035	Gradual decline (-2% to -4%)

Drivers of Decline

1. Health consciousness
2. Global dietary influence
3. Startup-led anti-dairy narratives
4. Social media amplification
5. Rise of plant-based substitutes

These projections are based on extrapolating current urban consumption trends and assume continued growth of plant-based alternatives at 20–30% CAGR, consistent with IBEF (2024) projections

XIII. Limitations

This study carries several limitations that bound the interpretation of its findings. The primary sample of 30 respondents, while adequate for exploratory directional analysis, does not support statistically generalizable conclusions and limits the statistical power of the regression analysis. The sample is geographically concentrated in NCR/Noida and skewed toward the 18–35 educated urban demographic, meaning findings do not represent rural consumers or older age groups who collectively account for the majority of India's dairy volume. Survey responses capture stated attitudes and intentions rather than observed purchase behaviour, and may be subject to social desirability bias respondents may report more progressive attitudes than their actual consumption behaviour reflects. The financial projections in Sections 9 and 10 are scenario-based estimates constructed from publicly available industry data and are not econometrically derived forecasts; they should be treated as indicative ranges for strategic planning purposes rather than precise financial predictions. The regression coefficients reported in Section 7 are directionally indicative given the small sample size and should be interpreted with appropriate caution.

XIV. Future Scope

Several directions for more rigorous follow-on research emerge from this study. A large-scale quantitative survey across multiple Tier-1 and Tier-2 cities, with a sample size of 300–500 respondents, would enable statistically valid conclusions and allow for multi-variate regression with control variables including income, education level, and city tier. A longitudinal panel study tracking the same cohort's actual consumption behaviour over 3–5 years would provide direct evidence of whether stated attitudinal shifts translate into sustained behavioural change — the critical unresolved empirical question.

From a corporate finance perspective, building detailed DCF scenario models for listed dairy companies Heritage Foods, Parag Milk Foods, Hatsun Agro under differentiated demand trajectory assumptions would provide actionable guidance for equity analysts. Integrating ESG-adjusted discount rates into dairy company valuations, and testing whether current market prices already reflect perception-driven demand risk, would be a directly investable research output. Finally, comparative research examining how dairy companies in the UK, Netherlands, and Australia markets approximately 10–15 years ahead of India in the plant-based transition have managed the demand shift would offer strategic lessons directly applicable to the Indian context.

XV. Conclusion

India's dairy industry is not in crisis. It is, however, at the beginning of a decade-long financial transition that current valuations, management strategies, and industry analyses are not adequately pricing. The headline numbers ₹18–20 lakh crore in market size, 8–10% CAGR in organised sector revenue are real,

but they carry a Revenue Quality Score of 0.20. Four rupees of every five of apparent revenue growth are borrowed from an exhaustible structural transition, not earned from an expanding consumption base.

In the cities, among young consumers, the demand architecture is changing. A formalisation tailwind that generated the illusion of strong organic growth is fading. In its place, a perception-driven demand headwind is gathering slowly, unevenly, but with the structural momentum that comes from generational value shifts. The findings reveal a sector whose growth narrative rests on a structural illusion a reality that demands strategic repositioning before it manifests in quarterly results.

For dairy companies, the strategic imperative is clear: distinguish between borrowed growth and earned growth, invest in the brand and product repositioning needed to retain the next generation of consumers, and treat ethical perception risk as a balance sheet item not a public relations afterthought. The competitors to watch are not other dairy brands. They are the plant-based startups compounding at 20–30% annually while building genuine preference-based loyalty among the cohort that will be the dominant urban consumer within a decade.

The financial conclusion of this paper is not that dairy is dying. It is that the industry faces a transition from a low-risk, inelastic, habitually reproduced demand structure to a higher-risk, conditionally elastic, values-contested one. That transition has direct and quantifiable implications for revenue quality, EBITDA margins, pricing power, and enterprise valuation. Companies and investors who recognise this transition early and position accordingly will be materially advantaged over those who read formalisation-driven revenue growth as evidence of genuine demand strength.

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