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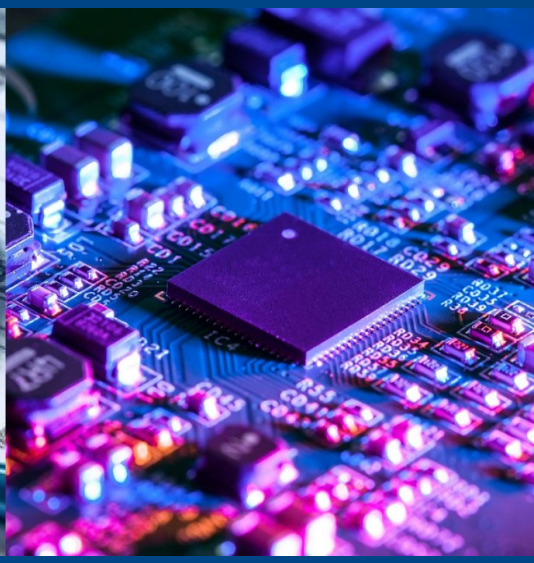

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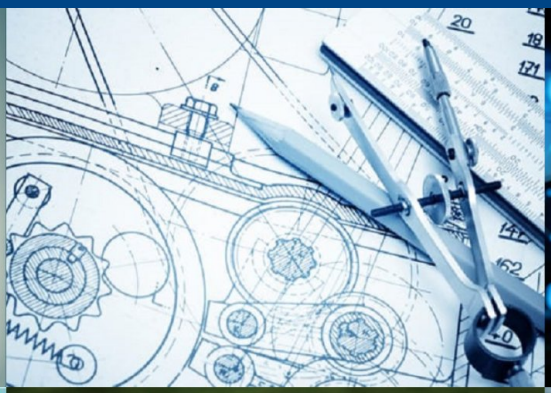

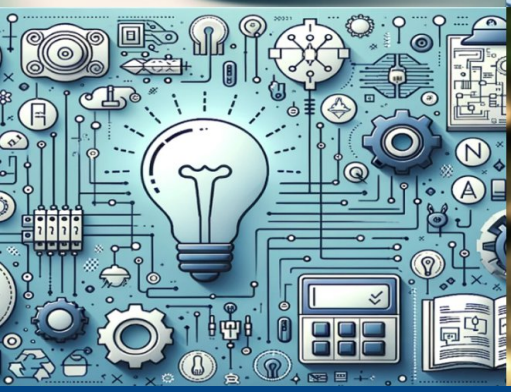

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Impact of Inflation on Profitability of Selected Indian FMCG Companies: An Empirical Analysis (2013–2024)

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ABSTRACT: This study empirically investigates the relationship between Consumer Price Index (CPI)-based inflation and the profitability of three prominent NSE-listed Indian FMCG companies Hindustan Unilever Limited (HUL), ITC Limited, and Nestle India Limited over the period 2013 to 2024. Using annual secondary data, the study employs descriptive statistics, Pearson correlation analysis, and Ordinary Least Squares (OLS) regression to examine the effect of inflation on three profitability indicators: Net Profit Margin (NPM), Return on Assets (ROA), and Return on Equity (ROE). Results reveal a consistent negative directional association between CPI inflation and all profitability metrics across all three firms. Regression analysis yields statistically significant negative effects of inflation on all three profitability indicators for HUL ($p < 0.01$ to $p < 0.001$) and ITC ($p < 0.05$), while Nestle India's results remain statistically insignificant, largely attributable to structural distortions from the 2015 Maggi crisis. Phase-wise trend analysis confirms that the moderation era (2015–2019) coincided with peak profitability across firms, while inflationary peaks in 2020 and 2022 produced short-term margin compressions. The study's findings suggest that brand equity, pricing power, and strategic supply chain management serve as effective inflation hedges, substantially mediating the cost-push transmission channel. These results contribute empirical firm-level evidence to inflation-profitability literature from an emerging market FMCG perspective and carry significant implications for corporate strategy and macroeconomic policy.

KEYWORDS: CPI Inflation, Profitability, FMCG, India, Net Profit Margin, Return on Assets, Return on Equity, OLS Regression

I. INTRODUCTION

Inflation, defined as the sustained increase in the general price level of goods and services, is a pervasive macroeconomic force that shapes corporate cost structures, consumer purchasing power, and ultimately, firm-level financial performance. In emerging economies such as India, inflation is driven by a complex interaction of supply-side disruptions, monetary policy shifts, exchange rate volatility, and food price cycles. The Reserve Bank of India (RBI) operates under a flexible inflation targeting framework since 2016, targeting CPI inflation at 4% with a tolerance band of ±2%, reflecting the central importance of price stability in India's macroeconomic management.

For firms operating in the Fast-Moving Consumer Goods (FMCG) sector, the consequences of inflation are particularly acute. FMCG companies operate on thin profit margins, depend on commodity-intensive input baskets, and serve a mass consumer base whose purchasing behaviour is highly sensitive to price changes. When inflation accelerates, input costs including raw materials, packaging, logistics, and energy rise simultaneously, compressing operating margins unless firms can pass these costs through to consumers via product price increases. However, such pass-through is constrained by competitive dynamics, consumer price elasticity, and retailer negotiating power.

India's inflation trajectory between 2013 and 2024 traversed four structurally distinct phases: a high-inflation pre-targeting era (2013–2014) with CPI peaking at 10.07%; a sustained moderation phase (2015–2019) following the adoption of inflation targeting; a COVID-19-induced supply shock in 2020 (CPI: 6.62%); and a post-pandemic

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inflationary resurgence (2021–2024) with CPI peaking at 6.70% in 2022. These phases present a rich natural experiment to examine how leading FMCG firms respond to varying inflationary environments over time.

This paper examines whether CPI-based inflation exerts a statistically significant impact on the profitability of three NSE-listed market leaders Hindustan Unilever Limited (HUL), ITC Limited, and Nestle India Limited over the 2013–2024 period. By employing Pearson correlation analysis and OLS regression across nine company-indicator pairs, the study provides firm-specific, decade-long empirical evidence on the inflation-profitability nexus in the Indian FMCG sector.

II. LITERATURE REVIEW

The relationship between inflation and corporate profitability has attracted extensive academic attention across macroeconomic and financial management disciplines. Fischer (1993) established that high inflation reduces economic efficiency and corporate profitability by elevating uncertainty in cost and revenue forecasting. Fama (1981) documented a significant negative correlation between inflation and real equity returns, arguing that rising price levels erode real corporate earnings. These foundational contributions anchored the theoretical consensus that inflation represents a systemic risk to firm financial performance.

The cost-push transmission mechanism whereby inflation raises input costs, compresses gross margins, and reduces net profit if pass-through to consumers is incomplete forms the backbone of this literature. Jorgenson (1963) outlined how inflation inflates asset replacement costs, reducing capital productivity and thereby depressing ROA. Ahmed and Rogers (2000) provided panel evidence from emerging economies showing that sustained inflation erodes operating margins due to the asymmetric speed of input cost escalation relative to output price adjustments.

Ghosh and Phillips (1998) presented cross-country evidence that inflation above 2–3% significantly lowers economic growth and corporate profitability, findings particularly relevant to India's 2022 episode. Mohanty and John (2015) focused specifically on Indian corporate profitability, finding that inflation exerts a statistically significant impact on cost structures and profit margins. The Reserve Bank of India (2022) noted the disproportionate influence of food and fuel inflation on input costs across consumer goods manufacturing.

The demand-pull counterargument that moderate inflation, reflecting healthy aggregate demand, may expand revenues for consumer-facing firms is advanced by Bruno and Easterly (1998), who nonetheless cautioned that prolonged high inflation reverses this effect. Bernanke (2005) argued that credible inflation targeting enhances macroeconomic predictability, benefiting corporate investment and profitability by reducing uncertainty. Taylor (1993) further linked rule-based monetary policy to improved corporate financial performance through anchored inflation expectations.

Apergis and Eleftheriou (2002) demonstrated a long-run negative relationship between inflation and stock market performance, while Naceur and Ghazouani (2007) established that inflation volatility impedes financial sector development, raising corporate financing costs. Boyd, Levine, and Smith (2001) found that high inflation undermines financial intermediation, increasing debt burdens on leveraged firms. Bekaert and Engstrom (2010) showed that elevated inflation risk increases the cost of capital, reducing corporate capital expenditure.

While the global literature provides robust theoretical and cross-sectional evidence, empirical studies focused on firm-level inflation sensitivity within India's FMCG sector particularly covering the post-COVID inflationary episode remain limited. This study directly addresses that gap.

III. RESEARCH GAP

Three specific gaps motivate this study. First, the existing literature on inflation and corporate profitability is dominated by broad macroeconomic analyses or sector-wide studies in banking and manufacturing, without isolating firm-level dynamics in consumption-driven industries that operate under distinct demand and cost structures. The FMCG sector characterised by high volume, low margin, and direct exposure to commodity input prices warrants dedicated empirical investigation.

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Second, most prior Indian studies predate the post-COVID inflationary episode of 2020–2023, an economically significant period characterised by unprecedented supply chain disruptions, commodity price surges, and consecutive RBI policy rate hikes amounting to 250 basis points. The absence of empirical evidence covering this critical macroeconomic period constitutes a substantive analytical gap.

Third, existing research on FMCG companies in India focuses predominantly on consumer behaviour, competitive dynamics, or market performance, rather than the direct statistical relationship between CPI-based inflation and firm-level profitability ratios over multi-year horizons. This study addresses all three gaps by providing firm-specific, decade-long empirical evidence using OLS regression and correlation analysis for three prominently listed Indian FMCG companies.

IV. OBJECTIVES OF THE STUDY

The study pursues four interrelated research objectives:
(1) To characterise the trajectory and phase-wise dynamics of CPI inflation in India from 2013 to 2024, identifying structurally distinct macroeconomic periods relevant to FMCG profitability analysis.
(2) To profile the annual profitability performance of HUL, ITC, and Nestle India across Net Profit Margin, Return on Assets, and Return on Equity over the study period.
(3) To statistically examine the relationship between CPI inflation and each of the nine profitability indicators using Pearson correlation and OLS regression analysis.
(4) To derive managerial, theoretical, and policy implications from the empirical findings, and to identify directions for future research.

V. RESEARCH METHODOLOGY

5.1 Research Design and Data

This study adopts a quantitative, explanatory, and longitudinal research design. The dependent variables are NPM, ROA, and ROE for each of the three firms; the independent variable is the annual CPI inflation rate for India. Annual data spanning 2013–2024 (n=12 per variable) are employed to ensure alignment with corporate annual reporting cycles and to capture multiple inflation regimes. All data are secondary, sourced from: (i) annual audited reports of HUL, ITC, and Nestle India; (ii) Screener.in for independent financial ratio triangulation; and (iii) the RBI's Database on Indian Economy, MOSPI, and World Bank WDI for CPI data cross-verified across all three sources.

5.2 Variable Operationalisation

Net Profit Margin is calculated as (Net Profit After Tax / Total Revenue) × 100, using consolidated financial statements. Return on Assets is calculated as (Net Profit After Tax / Average Total Assets) × 100, where average total assets represent the arithmetic mean of opening and closing total assets for each fiscal year. Return on Equity is calculated as (Net Profit After Tax / Average Total Shareholders' Equity) × 100. Financial data up to FY2016 are sourced from Indian GAAP-based reports; post-FY2017 data comply with Ind AS, with adjustments for comparability where applicable. All fiscal year profitability data are matched to the corresponding calendar year CPI inflation figure.

5.3 Analytical Methods

The analytical framework comprises four sequential stages. First, descriptive statistics (mean, standard deviation, minimum, and maximum) are computed for all ten variables. Second, phase-wise trend analysis segments the study period into four macroeconomically distinct phases. Third, Pearson correlation coefficients are computed between CPI inflation and each profitability variable, with the following classification scale: $|r| < 0.20$ = Negligible; 0.20–0.39 = Weak; 0.40–0.59 = Moderate; 0.60–0.79 = Strong; ≥ 0.80 = Very Strong.

Fourth, nine separate OLS regression equations are estimated, one per company-indicator pair, of the form: Profitability Indicator = $\alpha + \beta$(CPI Inflation Rate) + ε. All hypotheses are tested at the 5% significance level ($\alpha = 0.05$). With n=12, degrees of freedom equal 10, and the critical two-tailed t-value is ±2.228. A bivariate model is deliberately adopted to isolate the direct CPI-profitability association; the acknowledged omission of control variables such as GDP growth, interest rates, and commodity indices is a recognised limitation discussed in Section 10. All computations were performed using Microsoft Excel's Data Analysis ToolPak.

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5.4 Sample Justification

The three firms are selected on the basis of four criteria: (a) market capitalisation and NSE listing consistency over the full study period; (b) availability of independently audited annual reports across twelve years; (c) business model diversity HUL (pure FMCG), ITC (diversified conglomerate with FMCG as a core segment), and Nestle India (food and beverage MNC subsidiary) enabling comparison of inflation sensitivity across distinct operating structures; and (d) combined representation of a substantial share of the organised Indian FMCG market.

VI. DATA ANALYSIS AND RESULTS

6.1 CPI Inflation Trend (2013–2024)

Table 1 presents annual CPI inflation data for India over the study period, revealing four structurally distinct phases. The pre-targeting phase (2013–2014) was characterised by elevated inflation, peaking at 10.07% in 2013, driven by food price pressures and rupee depreciation. Following the RBI's adoption of flexible inflation targeting in 2015, a sustained moderation phase (2015–2019) saw CPI decline to a decade-low of 3.33% in 2017. The COVID-19 shock year of 2020 produced a supply-driven spike to 6.62%, breaching the RBI's upper tolerance band. The post-pandemic resurgence phase (2021–2024) saw inflation peak at 6.70% in 2022, driven by global commodity prices and supply chain disruptions, before moderating to 4.85% (provisional) in 2024 following aggressive monetary tightening.

Table 1: India Annual CPI Inflation Rate (2013–2024)

Year	CPI Inflation Rate (%)
2013	10.07
2014	6.68
2015	4.91
2016	4.94
2017	3.33
2018	3.94
2019	3.73
2020	6.62
2021	5.13
2022	6.70
2023	5.65
2024	4.85*

Note: *2024 figures are provisional estimates. Sources: RBI DBIE; MOSPI; World Bank WDI (2024).

6.2 Descriptive Statistics

Table 2 presents descriptive statistics for all ten study variables over 2013–2024. Mean CPI inflation was 5.55% (SD = 1.74), with a range of 3.33%–10.07%, reflecting significant year-to-year volatility. Across firms, ITC recorded the highest average NPM (25.83%), consistent with the inelastic demand characteristics of its cigarette business. Nestle India achieved the highest mean ROA (39.93%) and ROE (88.11%), reflecting its highly asset-light and equity-lean business model. HUL exhibited the most stable profitability profile, with the lowest NPM standard deviation (1.08%). Nestle India showed the greatest ROE volatility (SD = 12.78%), largely attributable to the 2015 Maggi product recall crisis a firm-specific, non-inflationary structural shock.

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Table 2: Descriptive Statistics of All Study Variables (2013–2024)

Variable	Mean (%)	Std Dev	Min (%)	Max (%)
CPI Inflation	5.55	1.74	3.33	10.07
HUL – NPM	14.59	1.08	12.40	16.30
HUL – ROA	35.67	3.14	28.50	40.20
HUL – ROE	76.72	3.79	68.40	82.30
ITC – NPM	25.83	1.47	22.30	27.80
ITC – ROA	24.18	1.52	20.80	26.30
ITC – ROE	32.87	2.06	27.90	35.60
Nestle – NPM	12.16	1.50	9.40	14.50
Nestle – ROA	39.93	4.93	30.60	47.20
Nestle – ROE	88.11	12.78	64.20	108.40

Note: n = 12 observations per variable. All profitability ratios expressed as percentages.

6.3 Pearson Correlation Analysis

Table 3 presents Pearson correlation coefficients between annual CPI inflation and the nine profitability variables. All coefficients are negative, confirming that inflation is inversely associated with profitability across all firms and indicators. For HUL, correlations are strong to very strong: inflation vs. NPM ($r = -0.784$), vs. ROA ($r = -0.848$), and vs. ROE ($r = -0.910$), consistent with cost-push transmission being moderated but not eliminated by HUL's brand-led pricing power. For ITC, correlations are uniformly strong: inflation vs. NPM ($r = -0.637$), vs. ROA ($r = -0.737$), and vs. ROE ($r = -0.623$), though the substantial 2020 COVID shock to the hospitality segment constitutes a confounding factor in these coefficients. Nestle India exhibits weak to negligible correlations across all three measures ($r = -0.227$ to -0.144), primarily because the 2015 Maggi crisis a firm-specific shock occurring during a low-inflation year distorts the inflation-profitability association for this firm.

Table 3: Pearson Correlation Coefficients – CPI Inflation vs. Profitability (2013–2024)

Company	Inflation vs NPM (r)	Inflation vs ROA (r)	Inflation vs ROE (r)
HUL	−0.784 (Strong)	−0.848 (Very Strong)	−0.910 (Very Strong)
ITC	−0.637 (Strong)	−0.737 (Strong)	−0.623 (Strong)
Nestle India	−0.227 (Weak)	−0.191 (Negligible)	−0.144 (Negligible)

Note: Classification: $|r| < 0.20$ = Negligible; 0.20–0.39 = Weak; 0.40–0.59 = Moderate; 0.60–0.79 = Strong; ≥ 0.80 = Very Strong.

6.4 OLS Regression Results and Hypothesis Testing

Tables 4, 5, and 6 present OLS regression results for HUL, ITC, and Nestle India respectively. Nine hypotheses are tested at $\alpha = 0.05$ (critical $t = \pm 2.228$, $df = 10$, two-tailed).

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Table 4: OLS Regression Results – HUL

Dependent Variable	Intercept (α)	Beta (β)	R^2	t-Statistic	p-Value	H_0 Decision
NPM	17.29	−0.487	0.615	−3.996	0.003*	Rejected
ROA	44.13	−1.526	0.720	−5.069	0.001*	Rejected
ROE	87.67	−1.976	0.828	−6.931	0.000*	Rejected

Note: * $p < 0.05$. Critical t-value = ±2.228 (df = 10, two-tailed).

Table 5: OLS Regression Results – ITC

Dependent Variable	Intercept (α)	Beta (β)	R^2	t-Statistic	p-Value	H_0 Decision
NPM	28.82	−0.539	0.406	−2.614	0.026*	Rejected
ROA	27.75	−0.643	0.543	−3.447	0.006*	Rejected
ROE	36.95	−0.737	0.389	−2.522	0.030*	Rejected

Note: * $p < 0.05$. Critical t-value = ±2.228 (DF = 10, two-tailed).

Table 6: OLS Regression Results – Nestle India

Dependent Variable	Intercept (α)	Beta (β)	R^2	t-Statistic	p-Value	H_0 Decision
NPM	13.24	−0.195	0.051	−0.736	0.472	Not Rejected
ROA	42.92	−0.540	0.036	−0.615	0.544	Not Rejected
ROE	93.97	−1.058	0.021	−0.461	0.645	Not Rejected

Note: No coefficients significant at the 5% level. Critical t-value = ±2.228 (df = 10, two-tailed).

Table 7 consolidates hypothesis decisions across all nine regressions. Of the nine null hypotheses tested, six are rejected all three for HUL and all three for ITC while all three for Nestle India are not rejected.

Table 7: Summary of Hypothesis Decisions

Company	Variable	Beta (β)	p-Value	H_0 Decision
HUL	NPM	−0.487	0.003*	Rejected
HUL	ROA	−1.526	0.001*	Rejected
HUL	ROE	−1.976	0.000*	Rejected
ITC	NPM	−0.539	0.026*	Rejected

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Company	Variable	Beta (β)	p-Value	H_0 Decision
ITC	ROA	−0.643	0.006*	Rejected
ITC	ROE	−0.737	0.030*	Rejected
Nestle India	NPM	−0.195	0.472	Not Rejected
Nestle India	ROA	−0.540	0.544	Not Rejected
Nestle India	ROE	−1.058	0.645	Not Rejected

Note: * Statistically significant at 5% level ($p < 0.05$).

VII. DISCUSSION

7.1 Inflation and Profitability: A Nuanced Relationship

The empirical results confirm that CPI inflation exerts a statistically significant negative impact on the profitability of HUL and ITC across all three measures, providing support for cost-push inflation theory as articulated by Fischer (1993), Jorgenson (1963), and Ahmed and Rogers (2000). For HUL, the R^2 of 0.828 for the ROE model indicates that CPI inflation alone explains approximately 83% of annual variation in shareholder returns a remarkably high explanatory power for a bivariate model. The β of −1.976 implies that each one-percentage-point increase in CPI inflation is associated with a 1.976 percentage-point decline in HUL's ROE, ceteris paribus, a magnitude that is both statistically and economically significant.

However, the consistent recovery of profitability following each inflationary episode the 2020 COVID shock and the 2022 commodity price surge reveals that the cost-push transmission channel is not permanent in the FMCG context. This finding qualifies the theoretical prediction: while inflation compresses margins in the short run, brand equity and pricing power function as effective buffers that restore profitability within one to two reporting cycles. The 2022 inflationary peak produced a decline in HUL's NPM of only 1.2 percentage points (from 15.2% to 14.1%) despite what management characterised as the most severe input cost inflation in four decades, underscoring the potency of these strategic buffers.

7.2 Firm-Specific Heterogeneity

The differential regression results across firms illuminate the role of business model structure in modulating inflation sensitivity. HUL's asset-light model, which outsources production and maintains lean capital deployment, partially insulates ROA from the capital productivity compression channel identified by Jorgenson (1963). This is evidenced by consistently elevated ROA values (mean 35.67%) even during inflationary peaks, and rapid reversion following corrections.

For ITC, the strong correlation and significant regression results must be interpreted with an important caveat: the 2020 observation represents a structural shock to the hospitality segment rather than an inflation-driven margin compression. The coincidence of this pandemic-related revenue collapse with elevated CPI in 2020 inflates the apparent inflation sensitivity of ITC's profitability measures. Removing this structural outlier would likely weaken the regression coefficients, particularly for ROE ($R^2 = 0.389$), which is the weakest fit among ITC's significant results.

Nestle India's statistically insignificant results present the most analytically interesting case. Despite possessing a food and beverage-focused business model that carries inherently high exposure to agricultural commodity inflation, regression analysis yields no significant inflation-profitability link. The 2015 Maggi crisis a firm-specific regulatory shock that produced dramatic margin compression during a low-inflation year (CPI: 4.91%) creates a powerful confounding observation that distorts the inflation signal. Moreover, Nestle India's ROE frequently exceeds 100%, reflecting an extremely lean equity base and large dividend payouts rather than operational outcomes, making this metric particularly susceptible to capital structure effects that are orthogonal to inflation.

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7.3 Phase-Wise Dynamics

The phase-wise analysis reveals that the moderation era (2015–2019) represented the most favourable operating environment for all three FMCG firms, generating the strongest profitability improvement across the decade. Stable and predictable inflation reduced input cost uncertainty, enabling longer-horizon pricing, procurement, and brand investment decisions consistent with Bernanke's (2005) argument that inflation targeting improves corporate financial performance through enhanced economic predictability.

The 2022 inflationary resurgence provides a particularly instructive case because, unlike 2020, the cost compression was unambiguously inflation-driven and simultaneously affected all major input categories edible oils, grains, packaging materials, and fuel rather than being concentrated in specific sectors. Yet even under this extreme stress, the simultaneous decline in profitability across all three firms was moderate in magnitude and fully reversed within two fiscal years. This pattern is inconsistent with the permanent margin erosion predicted by classical cost-push theory and instead supports a model of inflation as a transient perturbation that firm-level strategic capabilities can absorb and neutralise over medium-term horizons.

7.4 Theoretical Contributions

The findings provide partial support for cost-push inflation theory, confirming the direction of effect but challenging its permanence assumption. They also implicitly challenge the Fisher Effect's applicability to low-leverage FMCG firms: despite the RBI's 250 basis point rate hike cycle in 2022–2023, none of the three firms exhibited significant profitability deterioration attributable to financing cost increases, consistent with their near-zero debt profiles. The demand-pull inflation channel finds limited but observable support in the 2020 data for HUL and Nestle India, where pandemic-driven demand for hygiene and ready-to-eat products generated positive profitability outcomes despite elevated CPI suggesting that when inflation co-occurs with demand for a firm's specific product categories, the net profitability effect can be positive.

VIII. CONCLUSION

This study provides empirical firm-level evidence on the relationship between CPI inflation and profitability in the Indian FMCG sector over 2013–2024. The core finding is that CPI inflation exerts a statistically significant negative impact on NPM, ROA, and ROE for Hindustan Unilever Limited and ITC Limited, while the relationship is statistically insignificant for Nestle India primarily due to structural distortions from the 2015 Maggi crisis. The consistent negativity of all nine beta coefficients, combined with the strong correlation coefficients for HUL and ITC, confirms that cost-push inflation transmission is operative in India's leading FMCG companies.

Critically, however, this study also demonstrates that the inflationary impact on FMCG profitability is transient rather than permanent. The rapid recovery of all profitability indicators following the 2020 and 2022 inflationary episodes and the achievement of decade-high margins by 2023–2024 reveals that brand equity, pricing power, premiumisation, and operational agility function as durable inflation hedges. This finding contributes a substantive qualification to classical cost-push theory: in markets dominated by strong consumer brands with inelastic demand, the permanent profit erosion channel predicted by theory is substantially attenuated by firm-level strategic capabilities.

From a macroeconomic perspective, the moderation phase (2015–2019) characterised by stable, below-target inflation under the RBI's inflation targeting framework was empirically associated with the most sustained improvement in FMCG profitability across all three firms, lending support to the policy case for credible inflation targeting as a driver of corporate financial performance in emerging markets.

IX. MANAGERIAL IMPLICATIONS

The empirical findings carry four specific strategic implications for FMCG managers operating in inflationary environments.

First, brand equity should be treated as a primary inflation hedge, not a discretionary expenditure. The data demonstrates unequivocally that firms with strong brand loyalty enabling price increases without proportionate volume losses are able to maintain profitability during inflationary stress. Cutting brand investment during high-inflation periods to manage near-term costs is counterproductive, as it erodes the core mechanism of inflation

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resilience. Marketing expenditure in this context functions analogously to a put option against inflationary margin compression.Second, premiumisation should be embedded as a structural inflation management strategy rather than a growth-phase initiative. Higher-margin premium products provide more absolute rupee gross profit per unit, creating buffer against input cost escalation without requiring proportional price increases in volume-driving categories. Firms that systematically shift their portfolio mix toward premium offerings improve their structural tolerance for inflationary episodes, as evidenced by the modest NPM decline of only 0.7 percentage points for HUL in 2022 a year of unprecedented input cost inflation.

Third, multi-lever pricing strategies combining judicious product price increases in premium tiers, grammage adjustments in mass-market products, and selective reduction of trade promotions should be pre-designed and held ready for deployment, rather than assembled reactively once inflation has already compressed margins. Companies with pre-positioned playbooks, such as those evidenced in HUL's and Nestle India's management commentary from 2022, achieve faster margin recovery with less consumer goodwill erosion.

Fourth, supply chain resilience investment must precede inflationary episodes. Supplier diversification across geographies, forward contracts for key agricultural and petrochemical inputs, and real-time digital procurement monitoring are operational capabilities that yield asymmetric benefits when commodity price cycles accelerate. HUL's documented operational resilience across multiple inflationary cycles provides empirical support for the material value of proactive supply chain investment.

X. LIMITATIONS AND SCOPE FOR FUTURE RESEARCH

10.1 Limitations

Four limitations constrain the scope and generalisability of the findings. First, the sample comprises twelve annual observations per variable, producing ten regression degrees of freedom. While sufficient for directional inference, this sample size limits statistical power and may fail to detect weaker inflation-profitability associations that exist in the underlying data-generating process. Second, the study covers only three large-cap, market-leading FMCG firms.

The structural advantages brand equity, scale, and pricing power that characterise these firms are not representative of mid-sized or unbranded FMCG manufacturers, and the findings should not be extrapolated to the broader sector. Third, the bivariate regression design, while methodologically appropriate to the study scope, omits potentially important control variables including GDP growth, interest rates, exchange rates, commodity price indices, and firm-specific variables such as leverage, R&D expenditure, and advertising intensity. Omitted variable bias may affect the precision and interpretation of the estimated inflation coefficients. Fourth, the use of headline CPI which includes services, education, and healthcare components as the inflation measure may imperfectly capture the input cost pressures actually faced by FMCG manufacturers, whose cost baskets are concentrated in food commodities, packaging materials, and fuel.

10.2 Scope for Future Research

The study opens several productive avenues for future research. Panel regression analysis incorporating mid-sized and smaller FMCG firms would establish whether the inflation resilience documented here is structurally specific to market leaders or more broadly distributed. Multivariate models controlling for GDP growth, interest rates, commodity price sub-indices, and firm-specific variables would yield more precise estimates of the isolated CPI inflation effect. Time-series methodologies including lagged response models,

Granger causality testing, and Vector Autoregression using quarterly data would reveal the dynamic adjustment path and lag structure of the inflation-profitability relationship, which is obscured by annual aggregation. The construction of a firm-specific input cost index tracking the prices of edible oils, packaging polymers, wheat, palm oil, and fuel rather than using headline CPI would improve the external validity of inflation's measured effect on FMCG profitability. Finally, international comparative studies with FMCG markets in Indonesia, Brazil, Nigeria, and Vietnam would establish whether the resilience patterns documented for Indian market leaders reflect India-specific institutional and regulatory conditions or represent a common feature of dominant FMCG firms in high-growth emerging markets.

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