

# Inventory Turnover Ratio and Cash Conversion Cycle as Determinants of Supply Chain Efficiency in FMCG Distribution: Empirical Evidence from a Regional Distributor in India

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**Abstract**—The Fast-Moving Consumer Goods (FMCG) distribution sector in India operates under persistent financial constraints, demanding precise and agile supply chain management. This study examines the relationship between Inventory Turnover Ratio (ITR) and Cash Conversion Cycle (CCC) as dual indicators of supply chain efficiency at the subject enterprise Enterprises, a mid-sized multi-brand FMCG distributor based in Maharashtra, Maharashtra. Using primary operational data collected across eleven product lines from April to July 2024, the research computes and benchmarks ITR and CCC values for each brand portfolio. Findings reveal that nine out of eleven product lines maintain ITR within the industry-ideal range of 5–10, while the majority of product categories demonstrate a negative CCC, indicating that the distributor receives payment before settling supplier obligations. The study identifies technology adoption, structured delivery scheduling, and advance-based payment collection as key performance drivers. Two outlier categories McNroe Consumer Products and Pitambari Innovative exhibit sub-optimal ITR values, pointing to demand volatility and stockpiling challenges unique to personal grooming and spiritual products. The paper contributes an empirically grounded micro-level analysis of FMCG supply chain metrics, filling a gap in literature that predominantly focuses on large manufacturers rather than distributors. Actionable recommendations include lean inventory practices, digital integration, collaborative logistics, and sustainability-driven packaging strategies.

**Index Terms**—FMCG Supply Chain, Inventory Turnover Ratio, Cash Conversion Cycle, Distribution Efficiency, Indian FMCG Market, Working Capital Management, Maharashtra

## I. INTRODUCTION

India's FMCG sector, valued at approximately USD 167 billion as of 2023, is one of the most dynamic and competitively intense markets globally. Characterised by high-frequency purchases, thin margins, and demand volatility, the sector places extraordinary pressure on every node of the supply chain particularly on distributors who bridge the gap between national manufacturers and fragmented retail networks. Unlike their counterparts in developed economies, Indian FMCG distributors typically operate with limited capital buffers, constrained access to institutional credit, and heterogeneous retailer bases spanning modern trade, general trade, and e-commerce channels simultaneously.

In this environment, two financial-operational metrics assume critical strategic importance: the Inventory Turnover Ratio (ITR) and the Cash Conversion Cycle (CCC). The ITR quantifies how efficiently a distributor cycles through its inventory within a defined period, while the CCC measures the net duration between cash outflow for inventory procurement and cash inflow from sales. Together, these metrics serve as integrated diagnostic tools for evaluating liquidity management, operational efficiency, and competitive sustainability.

Despite their centrality to distributor operations, academic inquiry into ITR and CCC at the distributor level as opposed to the manufacturer level remains sparse. Existing literature on FMCG supply chains predominantly focuses on large multinational companies or sector-wide aggregates, leaving a

meaningful analytical gap at the distributor stratum. This study addresses that gap through a focused empirical investigation at the subject enterprise Enterprises, a Maharashtra-based distributor managing eleven FMCG brand portfolios across healthcare, personal care, homecare, nutrition, and lifestyle categories.

The research objectives are threefold: first, to calculate and interpret ITR and CCC for each product line based on actual transactional data; second, to identify operational factors that drive efficiency or inefficiency across categories; and third, to propose evidence-based strategies for improving supply chain performance at comparable distributor organisations.

## II. LITERATURE REVIEW

### 2.1 Supply Chain Management in the FMCG Sector

The architecture of FMCG supply chains is often described as a paradox: simple in manufacturing design but extraordinarily complex in distribution execution (Shah, 2016). Products are manufactured at scale, stored at central warehouses, and then dispersed through layered networks comprising super-stockists, distributors, sub-distributors, wholesalers, and retailers. At each layer, the principal challenge is synchronising product availability with unpredictable retail demand, while minimising the capital locked in pipeline inventory.

Kumar (2022) emphasises that the distributor's role within this architecture is not merely logistical it is financial. By absorbing credit risk from retailers and advancing payment to manufacturers on agreed terms, distributors effectively serve as working capital intermediaries. Their financial health directly influences service levels, order fulfilment rates, and ultimately, brand availability at the point of purchase. The Indian FMCG distribution landscape is further complicated by regional heterogeneity, infrastructural disparities, and the coexistence of formal and informal retail channels. Singh and Garg (2020) document that FMCG logistics in India consumes over 15% of product revenue a figure significantly higher than global benchmarks attributed to poor road infrastructure, fragmented cold-chain networks, and high last-mile delivery costs.

### 2.2 Inventory Turnover Ratio as a Supply Chain Efficiency Indicator

The Inventory Turnover Ratio, defined as the Cost of Goods Sold divided by Average Inventory, is widely accepted as a primary indicator of inventory management efficiency. A higher ITR implies that goods cycle through the distributor's stock rapidly, reducing carrying costs, minimising obsolescence risk, and improving cash availability.

For FMCG distributors, the industry-normative ITR range is typically cited as 5 to 10 per annum, reflecting the fast-moving nature of consumer goods. Sharma (2019) argues that an ITR below 5 signals systemic inefficiency either through demand forecasting failures, overstocking in response to manufacturer push schemes, or inadequate retailer servicing. Conversely, an ITR above 10 may indicate understocking, which risks service failures and lost sales. The relationship between ITR and distributor profitability is non-linear. Kumar and Mehta (2021) demonstrate that distributors achieving ITRs in the 5–8 range consistently report higher operating margins than those at either extreme, suggesting an efficiency sweet spot that balances throughput with adequate inventory buffers.

### 2.3 Cash Conversion Cycle in Distribution Contexts

The Cash Conversion Cycle, introduced as an integrated working capital metric, decomposes into three components: Days Inventory Outstanding (DIO), Days Sales Outstanding (DSO), and Days Payable Outstanding (DPO). A negative CCC where DPO exceeds the sum of DIO and DSO represents an operationally superior condition in which a business collects cash from customers before disbursing payment to suppliers, effectively operating with supplier-financed working capital.

For FMCG distributors, achieving a negative CCC is particularly consequential. Sharma (2019) notes that distributors with negative CCC values exhibit lower dependence on external short-term borrowing, higher reinvestment capacity, and greater resilience during demand downturns. The mechanism typically involves two levers: collecting payments from retailers in advance or within very short windows (reducing DSO), and negotiating extended credit terms with manufacturers (extending DPO).

Sharma and Gupta (2021) examine distribution channel efficiency across Indian FMCG firms and find

that advance payment policies common among mid-sized distributors managing credit risk with unknown or small-format retailers significantly compress DSO, often to zero or even negative values in cash-advance scenarios. This structural characteristic makes the Indian FMCG distribution model particularly amenable to achieving negative CCC outcomes.

#### 2.4 Technology and Digital Integration in FMCG Supply Chains

Digital transformation has emerged as a pivotal determinant of supply chain efficiency across the FMCG value chain. Real-time inventory tracking systems, automated reorder triggers, digital billing and collection tools, and route optimisation software have collectively reduced operational friction for distributors who have adopted them. However, as Singh and Garg (2020) observe, technology penetration among small and mid-sized Indian distributors remains uneven, with many continuing to rely on manual ledger-keeping and informal communication channels. The adoption of even basic digital tools such as distribution management software and mobile payment platforms has been shown to improve ITR by 0.5–1.2 points annually by reducing order processing delays and enabling more accurate demand-based procurement (Kumar and Mehta, 2021). These incremental improvements carry disproportionate financial impact at the distributor level where margins are narrow.

### III. RESEARCH METHODOLOGY

#### 3.1 Research Design

This study employs an exploratory-cum-descriptive research design, combining qualitative observation with quantitative financial analysis. The qualitative component involved structured interviews with key personnel at the subject enterprise Enterprises including the co-owners, inventory manager, and logistics head along with direct observation of warehouse operations, order processing routines, and delivery scheduling systems. The quantitative component involved the computation and analysis of ITR and CCC metrics derived from the enterprise's operational records. The research was conducted over a primary data collection period spanning June to August 2024, corresponding to the internship engagement of the lead researcher at the subject organisation.

3.2 Study Context: the subject enterprise Enterprises the subject enterprise Enterprises, established in September 2010 in Maharashtra, Maharashtra, represents a prototypical mid-tier Indian FMCG distributor. Founded by Mr. Ganesh Bhabad and Mr. Harish Bodke, the enterprise began operations with a single principal (Godrej Consumer Products) and 200 retail counters. Over fourteen years, it has expanded to distribute products from eleven FMCG companies across 5,000 retail counters, covering healthcare, nutrition, personal care, homecare, fragrance, and lifestyle categories.

The enterprise operates with a lean organisational structure: two co-owners responsible for strategic decisions, an accounting team of two individuals, an inventory manager, a logistics coordinator, and a team of six delivery personnel. Distribution coverage spans urban Maharashtra, peri-urban areas, and selected rural geographies within the Maharashtra district. Payment terms with manufacturers range from 3 to 7 days, while approximately 90% of retailer transactions are conducted on an advance or cash basis a deliberate risk mitigation strategy given prior adverse credit experience.

#### 3.3 Sampling and Data Collection

The sample comprises eleven FMCG product lines distributed by the subject enterprise Enterprises during the study period: Abbott Healthcare, Modi Naturals, Wipro Enterprises, McNroe Consumer Products, SC Johnson Products, Pitambari Innovative, CavinKare, Adjavis Venture, TTK Healthcare, Bioveda Research Company, and Godrej Consumer Products. This sample was selected through purposive sampling to ensure representation across product categories, sales volumes, and supply terms. Primary data comprising monthly Cost of Goods Sold (COGS), opening stock values, and closing stock values for April through July 2024 were extracted from the enterprise's distribution management records. Secondary data were drawn from published industry reports, academic journals, and relevant FMCG market analyses.

#### 3.4 Analytical Framework

Two core metrics were computed for each product line using July 2024 data as the reference month, as it represents the most complete and recent period within the study window:

Inventory Turnover Ratio (ITR):  $ITR = COGS \div \text{Average Inventory}$ , where  $\text{Average Inventory} = (\text{Opening Stock} + \text{Closing Stock}) \div 2$

Cash Conversion Cycle (CCC):  $CCC = DIO + DSO - DPO$ , where  $DIO = (\text{Average Inventory} \div COGS) \times 30$ ;  $DSO = -1$  day (advance collection);  $DPO = 3$  or 7 days depending on manufacturer terms

ITR values are benchmarked against the industry-standard range of 5–10. CCC values are assessed for sign (positive or negative) and magnitude, with negative values considered indicative of superior working capital management.

#### IV. DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

**4.1 Inventory Turnover Ratio – Cross-Brand Analysis**  
Table 1 presents the computed ITR values for all eleven product lines based on July 2024 operational data. The table includes COGS, average inventory, and the resulting ITR, along with a comparative assessment against the ideal industry benchmark.

Table 1: Inventory Turnover Ratio Across Product Lines – July 2024

| Company / Brand             | COGS (₹)  | Avg. Inventory (₹) | ITR  | Status             |
|-----------------------------|-----------|--------------------|------|--------------------|
| Abbott Healthcare Pvt Ltd   | 9,43,848  | 1,65,117           | 5.71 | Within Ideal Range |
| Modi Naturals Limited       | 5,89,341  | 99,700             | 5.91 | Within Ideal Range |
| Wipro Enterprises           | 2,19,342  | 43,325             | 5.06 | Within Ideal Range |
| McNroe Consumer Products    | 3,87,532  | 84,217             | 4.60 | Below Ideal Range  |
| SC Johnson Products Pvt Ltd | 4,86,198  | 94,118             | 5.16 | Within Ideal Range |
| Pitambari Innovative        | 13,58,204 | 2,84,644           | 4.77 | Below Ideal Range  |
| CavinKare Pvt Ltd           | 4,35,973  | 84,984             | 5.13 | Within Ideal Range |
| Adjavis Venture Ltd         | 64,394    | 10,932             | 5.89 | Within Ideal Range |
| TTK Healthcare Ltd          | 1,98,749  | 38,742             | 5.13 | Within Ideal Range |
| Bioveda Research Company    | 82,675    | 14,658             | 5.64 | Within Ideal Range |
| Godrej Consumer Products    | 12,48,872 | 2,47,792           | 5.04 | Within Ideal Range |

Source: the subject enterprise Enterprises Distribution Records (July 2024); Author's Computations

The data reveal that nine of the eleven product lines maintain ITR values within the accepted industry range of 5.0–10.0. The highest ITR is recorded for Modi Naturals Limited (5.91), closely followed by Adjavis Venture (5.89) and Abbott Healthcare (5.71). These figures reflect disciplined procurement aligned closely with retail demand, minimising excess stock accumulation.

Two product lines McNroe Consumer Products (4.60) and Pitambari Innovative (4.77) register ITR values below the 5.0 threshold. McNroe's underperformance can be attributed to irregular demand patterns in the personal grooming and deodorant segment, which is susceptible to seasonal fluctuations and competitive promotions. Pitambari Innovative, which encompasses agarbatti, spiritual products, and homecare items, exhibits higher inventory buildups

likely related to advance purchase requirements tied to festival-season demand cycles. Both categories warrant targeted inventory rationalisation interventions.

The consistency of ITR values across diverse product categories from nutritional supplements (Abbott) to household cleaners (SC Johnson) and fragrance products (Adjavis) reflects the subject enterprise's ability to manage multi-category distribution without systematic over-commitment to any single product line, a logistical competency that distinguishes effective mid-tier distributors.

**4.2 Cash Conversion Cycle – Cross-Brand Analysis**  
Table 2 presents the CCC decomposition for each product line, incorporating DIO, DSO, and DPO values alongside the derived CCC outcome.

Table 2: Cash Conversion Cycle Decomposition – July 2024

| Company / Brand             | DIO (Days) | DSO (Days) | DPO (Days) | CCC (Days) | CCC Type |
|-----------------------------|------------|------------|------------|------------|----------|
| Abbott Healthcare Pvt Ltd   | 5.24       | -1         | 3          | 1.24       | Positive |
| Modi Naturals Limited       | 5.07       | -1         | 3          | 1.07       | Positive |
| Wipro Enterprises           | 5.92       | -1         | 7          | -2.08      | Negative |
| McNroe Consumer Products    | 6.51       | -1         | 7          | -1.49      | Negative |
| SC Johnson Products Pvt Ltd | 5.80       | -1         | 7          | -2.19      | Negative |
| Pitambari Innovative        | 6.28       | -1         | 7          | -1.71      | Negative |
| CavinKare Pvt Ltd           | 5.84       | -1         | 7          | -2.15      | Negative |
| Adjavis Venture Ltd         | 5.09       | -1         | 7          | -2.90      | Negative |
| TTK Healthcare Ltd          | 5.84       | -1         | 7          | -2.15      | Negative |
| Bioveda Research Company    | 5.31       | -1         | 7          | -2.68      | Negative |
| Godrej Consumer Products    | 5.95       | -1         | 7          | -2.05      | Negative |

Source: the subject enterprise Enterprises Distribution Records (July 2024); Author's Computations

The CCC analysis yields a compelling finding: nine of eleven product lines achieve negative CCC values, meaning the subject enterprise Enterprises collects payment from retailers before it is required to settle obligations with manufacturers. This structural advantage arises from two concurrent operational policies: (a) the enterprise collects advance or same-day payment from approximately 90% of retailers, generating a DSO of -1 day; and (b) manufacturer credit terms of 7 days (for most companies) provide a sufficient DPO buffer to offset DIO durations averaging between 5 and 7 days.

The most favourable CCC is observed for Adjavis Venture (-2.90 days), reflecting its low-inventory, high-velocity fragrance product model. SC Johnson Products (-2.19 days) and CavinKare (-2.15 days) also demonstrate strong negative CCC outcomes, supported by efficient turnover and extended manufacturer credit windows.

Abbott Healthcare (1.24 days) and Modi Naturals (1.07 days) are the only two product lines with positive CCC values, albeit marginally so. Both companies carry manufacturer payment terms of only 3 days shorter than the 7-day terms offered by other principals which reduces DPO insufficiently to offset DIO duration. These positive values do not represent financial distress; rather, they reflect a slight structural disadvantage in payment term negotiation that could potentially be addressed through volume-based renegotiation.

#### 4.3 Synthesis: ITR–CCC Interaction

Considered jointly, the ITR and CCC data illuminate the financial-operational dynamics of FMCG

distribution. Product lines with higher ITR values tend to exhibit more favourable CCC outcomes because higher inventory velocity directly reduces DIO, the primary variable component of the CCC formula. Modi Naturals (ITR 5.91, CCC 1.07 days) and Adjavis (ITR 5.89, CCC -2.90 days) exemplify this relationship.

Conversely, the two sub-optimal ITR cases (McNroe and Pitambari) display CCC values of -1.49 and -1.71 days respectively still negative, owing to the advance payment structure, but less advantageous than high-performing categories. This demonstrates that even operationally challenged product lines can maintain working capital positivity when structural payment policies are correctly designed.

The findings collectively support the proposition that a well-structured payment collection policy can partially compensate for ITR inefficiencies in FMCG distribution, though it should not substitute for genuine inventory optimisation efforts.

## V. KEY FINDINGS

The empirical analysis yields the following principal findings:

- Inventory management across the subject enterprise Enterprises is predominantly efficient, with 81.8% of product lines (nine of eleven) achieving ITR values within the 5–10 industry benchmark, confirming alignment with FMCG sector norms.
- McNroe Consumer Products (ITR: 4.60) and Pitambari Innovative (ITR: 4.77) are identified as sub-optimal performers, experiencing slower

inventory velocity likely attributable to demand seasonality and promotional scheme-driven overstocking.

- The advance-based payment collection policy applied to approximately 90% of retailer transactions is the most consequential driver of negative CCC outcomes, effectively converting DSO into a value of -1 day across all product lines.
- Nine of eleven product lines achieve negative CCC values, indicating that the distributor operates with supplier-financed working capital for the majority of its portfolio, reducing dependence on short-term borrowing.
- DPO variance (3 days vs. 7 days) across manufacturer agreements is the primary differentiator between positive-CCC and negative-CCC product lines, underscoring the strategic importance of payment term negotiation in distributor financial planning.
- Digital inventory management tools partially adopted by the subject enterprise Enterprises contribute to real-time stock visibility, though full digitisation of order-to-delivery processes remains an improvement opportunity.
- The structured weekly delivery and collection scheduling system deployed across service zones is an operationally significant KPI, ensuring regular retailer servicing while controlling last-mile logistics costs.

## VI. DISCUSSION

The findings from the subject enterprise Enterprises offer several insights with broader applicability to mid-sized FMCG distributors operating in comparable Indian market contexts.

First, the near-universal achievement of negative CCC across the portfolio challenges the assumption that resource-constrained distributors necessarily operate under working capital stress. Where manufacturer credit terms are adequately structured and retail payment discipline is maintained, distributors can effectively invert the cash flow cycle in their favour a finding with significant implications for working capital management strategy in the sector.

Second, the persistence of sub-optimal ITR in two specific categories (personal grooming and spiritual/homecare) illustrates that category-specific

demand characteristics override general operational efficiency measures. Both McNroe Consumer Products and Pitambari Innovative are influenced by promotional calendars, festival cycles, and competitive shelf-space dynamics that create demand variability not easily addressed through standard inventory management techniques alone. Collaborative demand planning between distributor and manufacturer, potentially supported by point-of-sale data sharing, may offer a more effective solution than unilateral inventory reduction.

Third, the payment structure adopted by the subject enterprise Enterprises advance collection from retailers as a default while financially advantageous from a CCC standpoint, carries implicit costs in terms of market access. Retailers who lack liquidity may shift purchases to competing distributors offering credit terms, potentially limiting the subject enterprise's penetration of smaller or financially constrained retail formats. A tiered credit policy, offering limited credit to verified and established retailers while maintaining advance terms for newer or high-risk counters, may represent a more sustainable model.

Fourth, the study underscores the underexplored role of distributors as financial intermediaries in the FMCG value chain. Academic literature on supply chain finance predominantly focuses on manufacturer-level financial instruments such as reverse factoring and supply chain financing platforms. The distributor stratum, which absorbs credit risk bilaterally from both upstream manufacturers and downstream retailers deserves dedicated analytical and policy attention.

## VII. RECOMMENDATIONS

### 7.1 Inventory Optimisation for Sub-Optimal Categories

For McNroe Consumer Products and Pitambari Innovative, the enterprise should implement category-specific demand forecasting models that incorporate promotional calendars, festival seasonality indices, and historical sales volatility. Economic Order Quantity (EOQ) calculations recalibrated quarterly would help align procurement volumes more precisely with realised demand, reducing excess inventory without creating stockout risk. Partial adoption of Just-in-Time principles where manufacturer lead times

permit would further improve ITR for these categories.

#### 7.2 DPO Renegotiation with Short-Term Principals

Abbott Healthcare and Modi Naturals currently offer only 3-day payment terms, resulting in positive CCC values for these product lines. Given the subject enterprise Enterprises' strong payment track record and growing sales volumes for both brands, there is a viable basis for negotiating extended credit terms of 7–10 days. Even a modest extension to 5 days would convert both product lines to negative CCC, aligning them with the rest of the portfolio and improving overall working capital efficiency.

#### 7.3 Digital Inventory and Order Management Integration

While the subject enterprise Enterprises has partially adopted digital inventory tools, a comprehensive Distribution Management System (DMS) integrating real-time stock levels, automated reorder triggers, and digital invoicing would significantly reduce order processing lead times and improve DIO metrics across all product lines. Cloud-based DMS solutions designed for mid-market Indian distributors are now available at accessible price points and represent a high-return investment given the scale of operations.

#### 7.4 Tiered Retailer Credit Policy

To expand retail coverage without disproportionate credit risk, the enterprise could implement a tiered credit framework: Tier 1 (established retailers with 2+ years of relationship and verified credit history) eligible for 7-day credit; Tier 2 (mid-tenure retailers) eligible for 3-day credit; Tier 3 (new or irregular retailers) required to transact on advance terms. This structure would preserve the CCC advantage for most transactions while enabling penetration of currently underserved retailer segments.

#### 7.5 Sustainability and Packaging Efficiency

In alignment with growing regulatory expectations and consumer preferences, the enterprise could engage with manufacturer partners to advocate for reduced secondary packaging in bulk distribution. Reduced packaging waste lowers handling costs, improves warehouse space utilisation, and contributes to corporate sustainability positioning factors

increasingly relevant to large-format retailer procurement decisions.

### VIII. CONCLUSION

This study has demonstrated that Inventory Turnover Ratio and Cash Conversion Cycle, examined conjointly, provide a nuanced and actionable diagnostic framework for evaluating supply chain efficiency at the FMCG distributor level. The evidence from the subject enterprise Enterprises, Maharashtra, reveals a predominantly efficient operation: the majority of product lines achieve ITR values within the ideal range, and a structurally designed advance payment policy enables near-universal negative CCC outcomes an operationally superior condition that reduces working capital requirements and supports financial resilience.

The study also surfaces targeted improvement opportunities: two product lines with sub-optimal ITR require demand-aligned procurement strategies, and two principal relationships with compressed DPO terms warrant renegotiation. Beyond these specific interventions, the broader finding that mid-sized Indian FMCG distributors can achieve sophisticated working capital management outcomes through disciplined payment policy and structured logistics contributes to an underdeveloped strand of supply chain literature.

Future research could extend this analysis longitudinally to assess whether the efficiency patterns observed in the April–July 2024 window hold across full annual cycles, particularly given the pronounced seasonality in several product categories. Cross-sectional studies comparing multiple distributors within the same geography and principal network would further validate and contextualise the findings presented here.

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