Advances in Consumer Research
https://acr-journal.com/

Volume-2 | Issue-4 | Sep 2025

Original Researcher Article

Reimagining Digital Commerce: Strategic Integration of FMCG Supply Chains with ONDC in India

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Received: 08/08/2025
Revised: 28/08/2025
Accepted: 04/09/2025
Published: 18/09/2025

ABSTRACT

When you open the gates of access, you unlock the doors to transformation." With the Open Network for Digital Commerce (ONDC), a fundamental shift is underway in India's digital economy, moving from platform-centric e-commerce models to a decentralized, democratized interoperable ecosystem. The network is primarily intended for micro, small, and medium enterprises (MSMEs), kiranas, and startups. At the same time, Fast-Moving Consumer Goods (FMCG) giants can positively catalyse its scalability, efficiency, and long-term viability. This paper explores how digital commerce can be revolutionized by integrating leading FMCG players into the ONDC framework: this will improve supply chain transparency, reduce dependence on intermediaries, expand rural reach and inclusive growth. The study employs a multidisciplinary approach: policy analysis, market data, and strategic alignment frameworks highlight mutual value propositions between ONDC and FMCG entities. Further, it looks at early-stage pilot outcomes, identifying potential points of friction, and offers forward-looking recommendations. Providing actionable insights to government, industry, and academic stakeholders, the paper makes a valuable contribution to the emergent body of literature on open digital infrastructure.

Keywords: ONDC (Open Network for Digital Commerce), FMCG (Fast-Moving Consumer Goods), Inclusive Digital Commerce, Public Digital Infrastructure, Small and Medium Enterprises (SMEs).

INTRODUCTION

A quiet revolution is underway in India's digital commerce landscape, with potential to democratize the playing field for millions of small merchants and consumers. Over 60% of India's e-commerce market is dominated by large, vertically integrated platforms like Amazon and Flipkart (IBEF, 2023). However, they remain inaccessible to many small businesses, thanks to high commissions, data asymmetry, and dependence on closed systems. It is to address such structural inequalities that the Government of India launched the Open Network for Digital Commerce (ONDC) in 2022, under the Department for Promotion of Industry and Internal Trade (DPIIT). It is envisioned as a public digital infrastructure, unbundling digital commerce into interoperable components, letting buyers and sellers to engage in transactions across platforms.

The picture has been promising so far: by mid-2024, ONDC onboarded over 300,000 sellers across 300+ cities, over 60% being small or medium retailers (ONDC Progress Report, DPIIT, April 2024). Nearly 5 million transactions were processed in April 2024, pertaining primarily to mobility, food delivery, and grocery. However, integrating Fast-Moving Consumer Goods (FMCG) giants into this framework remains an unexplored avenue, It can scale adoption exponentially, improve supply chain efficiency, and deepen rural market expansion.

Let us consider Hindustan Unilever (HUL): thanks to Project Shikhar and its distributor network, it already reaches over 8 million retail outlets. HUL's integration into ONDC (as well as that of players like ITC, Nestlé, P&G, etc.), would allow kirana stores to source directly from manufacturers via open protocols, doing away with multi-layered intermediaries, thus reducing price distortion. In addition, digital catalogs and localized logistics solutions enabled through ONDC would let even remote retailers access real-time inventory, bulk discounts, and doorstep delivery.

It is within this framework that this paper looks at strategic, economic, and operational implications of

FMCG giants embracing ONDC as anchor players. The paper avails a mix of secondary research, policy evaluation, and case analysis, to explore the dynamics between India's leading consumer goods companies and the ONDC architecture, and argues in favour of this partnership's potential to redefine inclusive digital commerce altogether.

LITERATURE REVIEW

With the rise of open digital ecosystems, there have been significant recalibrations in terms of how digital commerce is conceptualized and operationalized in emerging economies. A growing body of literature across disciplines has begun to gauge the implications of initiatives like India's Open Network for Digital Commerce (ONDC). Even so, the role of large-scale anchor participants, particularly from the FMCG sector, has yet to be given adequate attention in academic and policy discourse.

ONDC as a Public Digital Infrastructure

As a neutral and interoperable digital commerce protocol, ONDC can "unbundle" various functions of e-commerce, from cataloguing, inventory, order management, fulfilment, to payments. Consequently, buyer-seller transactions are no longer dependent on the platforms they use. Reducing reliance on dominant players and encouraging broader participation by MSMEs & local businesses, e-commerce can be democratized (DPIIT 2022).

ONDC's design principles of inclusivity, interoperability, and vendor neutrality position it as India's "Digital UPI for Commerce" (NASSCOM 2023). Theories like Platform Unbundling Theory (Parker, Van Alstyne & Choudary, 2016) suggest disaggregating platform services facilitates competition & specialization. Similarly, ONDC allows separate entities to offer open-access logistics, payment, and catalogue services.

The E-Commerce Bottleneck for MSMEs and Kiranas
Considerable literature has covered the exclusionary nature of traditional e-commerce platforms. BCG and RAI (2022) noted that almost a third of kirana stores struggle to compete on e-commerce platforms due to onboarding costs, unfavourable terms, & limited data control. These platforms also create a data-opportunity asymmetry: small sellers contribute data but do not benefit from the insights (Mehta & Sharma, 2021, EPW).

Similarly, ICRIER (2021) has found access to digital tools and marketplaces in itself insufficient. Inclusive digital infrastructure is required, lowering entry barriers and increasing autonomy. ONDC attempts to bridge this gap, letting digitally enabled sellers to connect through third-party applications via standard APIs.

FMCG Distribution in India: Strengths and Structural Gaps

Deep distribution networks, rural reach, and high-frequency low-ticket transactions define India's FMCG sector. As per the India Brand Equity Foundation (IBEF, 2024), FMCG contributes over USD 110 billion to the economy, while rural India makes up over 40% of consumption. Giants like HUL, ITC, P&G, and Nestlé leverage extensive wholesaler-distributor-retailer networks.

At the same time, inefficiencies persist, such as fragmented demand visibility, credit dependency, opaque pricing (Singh & Rao, 2020, Journal of Supply Chain Management). Digitization efforts (e.g. HUL's Project Shikhar, ITC's e-Choupal) are largely proprietary and closed-loop systems. A report by Deloitte (2023) notes heavy investment by FMCG companies in digital transformation; however, challenges persist vis-à-vis interoperability across stakeholders.

Convergence of FMCG and ONDC: Theoretical and Strategic Rationale
From a strategic alignment perspective, FMCG firms can benefit by integrating directly with kiranas via ONDC. This reduces reliance on traditional intermediaries, and encourages real-time, data-driven fulfilment models (Bain & Co., 2023). Literature on Supply Chain Disintermediation (Christopher, 2016) supports this in terms of cost optimization and agility, especially given rapidly changing consumer environments.

The concept of Digital Public Goods (DPG) (UNDP, 2021) also supports ONDC's infrastructure, positioned as a tool to democratize access and ensure equitable digital participation. The integration of FMCG supply chains into ONDC offers high-volume, standardized goods to underserved markets via open networks.

Empirical and Pilot-Based Observations

Recent pilot studies have shed light on the real-world performance of ONDC. The ONDC Progress Report (April 2024) indicates successful integration across categories (groceries, mobility, food services) drawing participation from startups, MSMEs, and logistics entities (LoadShare, Shiprocket). FMCG participation shows encouraging early signs: statements by ITC and Dabur indicate early-stage interest (Economic Times, 2024).

Kirana stores onboarded via ONDC report better access to multi-brand catalogues, dynamic pricing, doorstep delivery. However, ERP integration, real-time stock visibility, and channel conflict with traditional distributors remain points of concern (Inc42, 2024).

Gaps in Existing Literature

As significant gap exists in peer-reviewed literature regarding ways FMCG giants can shape the trajectory of ONDC, the focus being primarily on technological architecture or MSME empowerment. Analysis is required combining strategic, operational, and policy

perspectives, so as to gauge nuances of onboarding large-scale, high-frequency suppliers like HUL or Nestlé.

To this end, this research aims to fill this gap by evaluating the relationship between ONDC's open infrastructure and the operational strengths of the FMCG sector.

Understanding ONDC: Vision, Architecture, & Potential

The Department for Promotion of Industry and Internal Trade (DPIIT) has come up with Open Network for Digital Commerce (ONDC) under the Ministry of Commerce and Industry. It is intended to break structural monopolies entrenched within conventional e-commerce platforms. It does so by offering a protocol-based, unbundled network layer wherein buyers and sellers may transact with ease by abiding by a common set of APIs and data standards, no matter the application or platform.

ONDC's core principles are interoperability, openness, and vendor neutrality. In the wake of India's success with the Unified Payments Interface (UPI), ONDC seeks to create a public digital infrastructure model in the commerce domain. It "unbundles" digital commerce functions (cataloguing, inventory management, order processing, logistics, payment, delivery), allowing service providers to plug into the network in specialized roles without owning the entire customer journey. This modular design allows for the participation of a wide spectrum of players: hyperlocal retailers, logistics startups, digital catalogue creators, payment fintechs, etc. Thus, a level playing field is created contrary to the winner-takes-all dynamics of contemporary platform economies.

ONDC's policy rationale is to democratize the benefits of digitalization. The current platform-centric model favours large, well-capitalized players disproportionately, often at the expense of small retailers, traditional kiranas, regional brands. The ONDC Strategy Paper (DPIIT, 2022) articulates an emphasis on reducing dependency on a single app or aggregator, and increasing market access for underrepresented sellers.

Technically, multiple buyer-side and seller-side applications operate in the network's federated model under a common interoperability layer. It adopts the Beckn Protocol, an open-source specification that standardizes interaction among participants. This decentralization pre-empts concentration of power, as well as risks of algorithmic opacity, gatekeeping, data monopolization.

DPIIT's 2024 mid-year evaluation gives positive indication as regards initial outcomes of the pilot phases. By onboarding over 300,000 sellers in over 300 cities, the ONDC has overseen over five million transactions in a month (as of April 2024). In addition to the particularly active food and grocery sectors, the network has also expanded into fashion, electronics, mobility, & B2B trade verticals. Tangible gains have also been made by small retailers in urban and semi-urban markets. These include greater product discoverability, multi-brand access, direct integration with multiple logistics providers. ONDC's plug-and-play logistics integrations have also led to improvements in delivery efficiencies and cost reductions, as reported by early adopters like SellerApp, Mystore, and LoadShare Logistics.

In addition to scale, the network's architecture is also notable for its capacity to evolve with emerging use-cases. India's digital commerce base is expected to reach 500 million users by 2030 (RedSeer, 2023). ONDC could act as infrastructure for inclusive trade, encouraging equitable participation from kiranas, farmer producer organizations, women-led enterprises, and local artisans. However, its actualization demands involvement of anchor participants capable of catalysing volume, trust, and network effects across buyer and seller ecosystems.

FMCG in India: Scale, Reach, & Digital Readiness

Among the most expansive and dynamic in the world, India's Fast-Moving Consumer Goods (FMCG) sector was valued at approximately USD 110 billion in 2023, expects to reach USD 220 billion by 2027 (IBEF, 2023). It is driven by essentials like packaged food, personal care, hygiene products, and over-the-counter health goods. Its high transaction frequency and widespread consumer base enhance the FMCG industry's influence on shaping the everyday economy –particularly important, when over 60% of India's population resides in rural areas.

FMCG goods typically proceed from manufacturers to clearing & forwarding agents (CFAs), then to distributors, to wholesalers, finally to retailers. This arrangement ensures a wide reach, but it also results in opacity, long lead times, info-asymmetry. This is conspicuous in rural markets, given high distribution costs and anecdotal or laggy demand data. Urban retail has benefitted from modern trade formats (supermarkets, hypermarkets, and organized retail chains), but traditional general trade still accounts for nearly 80% of India's FMCG retail (NielsenIQ, 2023). The vitality of kirana stores and small retailers in last-mile delivery speaks for itself.

FMCG giants keen to rewire their supply chains, and counter systemic inefficiencies, have increasingly invested in digital transformation. As part of its broader digitization agenda, Hindustan Unilever Limited (HUL)'s Project Shikhar aims to augment its distributor network with real-time demand forecasting, digital ordering systems, integrated inventory management. By 2024, this project had digitally connected over 800,000 retailers (HUL Annual Report, 2024). Similarly, ITC's e-Choupal, focused on rural digital platform, has helped farmers access agricultural inputs, weather forecasts, and market prices. It has also

aligned upstream supply chains with ITC's FMCG verticals. Procter & Gamble (P&G) and Nestlé have also deployed AI-based sales analytics and retailer loyalty platforms aimed at retail coverage and deepen customer insights.

However, longstanding challenges persist. These include fragmentation of the retail landscape: over 12 million kirana stores are spread across geographies, languages, and consumption patterns, leading to irregular data capture and service, and limited economies of scale. In addition, rural penetration remains uneven, due to poor infrastructure, high distribution costs, and digital divide. Even in urban clusters, small retailers fail to benefit from digital enablement due to lack of awareness, capital constraints, technological literacy.

While traditional dependence on intermediaries facilitates scale, it also undermines pricing transparency and manufacturer-retailer linkages. In addition to commanding significant portions of trade margins, middlemen obscure real-time demand signal. This results in a reactive rather than predictive supply chain. Without an interoperable ecosystem, proprietary systems used by FMCG players do not communicate directly.

The Open Network for Digital Commerce's (ONDC) unbundled, open protocol-based design means that FMCG manufacturers can bypass multiple layers of distribution, affording direct engagement with retailers. It also accesses local demand signals in real-time. Fulfilling this potential demand reorienting distribution strategy from control-centric to collaborative open-access models.

Strategic Fit: Why FMCG and ONDC Are Made for Each Other

FMCG firms and ONDC find common ground in terms of scale, access, and affordability. Their alignment can revolutionize FMCG distribution when it comes to digital inclusion, especially with regards to underpenetrated geographies and fragmented retail clusters.

FMCG companies have high-volume, low-margin models that require wide, deep reach. Growth relies on continuous penetration into Tier 2 and Tier 3 cities, semi-urban clusters, and rural regions where significant cost and efficiency barriers influence physical distribution. Manufacturers can avail ONDC's decentralized and protocol-driven approach to engage with kiranas, small retailers, and even consumers directly, with no need of a central mediating platform.

With the ONDC, it is possible to undertake the shift from a distributor-dominated model to a Direct-to-Retailer (D2R) or even Direct-to-Consumer (D2C) model. Connected via ONDC-compatible buyer apps, FMCG majors like Hindustan Unilever, Nestlé, or Marico, may be able to receive real-time orders from thousands of small retailers, bypassing many layers of intermediaries. In addition to improving margin realization for producers and retailers alike, this enables transparent pricing. Powered by ONDC's interoperable infrastructure, manufacturers can customize offers, precisely manage inventory dispatches, and reduce stockouts or overstocking situations through real-time analytics.

Another strategic benefit is Supply chain disintermediation. In the traditional multi-tiered FMCG distribution network, each intermediary adds to the final retail price and contributes marginally to value creation, making the process costly and often sub-optimized. ONDC enables agile supply chain orchestration, unbundling logistics, payment, cataloguing, fulfilment layers. By plugging in multiple third-party logistics (3PL) providers, last-mile delivery partners, and warehousing solutions via APIs, lean, custom-built supply chains can be consolidated.

There have been encouraging developments on this front. Hindustan Unilever Ltd. (HUL) initiated a limited pilot in 2024 in Madhya Pradesh and Bihar, integrating its B2B digital platform Shikhar with ONDC. It was designed to allow small retailers to place direct orders with HUL through ONDC buyer-side apps. This would enable retailers in remote rural clusters to access HUL's full product catalogue with transparent pricing and flexible minimum order quantities. According to the internal pilot assessment (as cited in Mint, March 2024), the model led to a 12% increase in order frequency from rural retailers and a 9% improvement in delivery turnaround time.

Similarly, ITC Ltd. began limited integration with ONDC in Uttar Pradesh and Karnataka, to pilot B2B sales of its personal care and food products. The ONDC network layer helped bypass traditional CFA-distributor structures, and facilitated dynamic pricing & direct order fulfilment via third-party logistics partners onboarded on the network. Business Standard reported (March 2024) a yield of 7–9% cost saving on average per unit sold in rural clusters, as well as a 15% increase in fill rates to small retailers.

Dabur has also looked intro ONDC integration via a third-party tech partner, to serve Ayurvedic and OTC products to pharmacies and kiranas in Southern India. Preliminary retailer feedback suggested better assortment visibility and control over minimum order quantities, previously seen as a bottleneck in distributor-driven channels. Startups like SuperK and 1K Kirana, enabling retail for Tier 2–3 cities, are also making use of ONDC buyer apps to source FMCG goods directly from brands. This reduces turnaround time and improves stock freshness considerably.

In strategic terms, ONDC can help FMCG players digitize existing supply chains and redesign them for speed, efficiency, and inclusivity. Proprietary D2R platforms cater to a single manufacturer's ecosystem. In contrast, ONDC promotes an open marketplace

where brands can coexist even in competition. This also reduces entry barriers for smaller brands and regional players, and gives larger players incentive to improve service and pricing discipline.

It is thus clear that ONDC and FMCG majors align strategically, driven by shared goals of reach expansion, cost rationalization, and consumer-centric distribution. It remains to be seen how proactive the FMCG sector's embrace of this new paradigm is: whether as parallel channel, or as a central pillar of its go-to-market architecture.

Opportunities for FMCG Giants on ONDC

The Open Network for Digital Commerce offers FMCG companies a chance to digitize existing channels, as well as reconfigure their approach to access, efficiency, and equity across India's consumption landscape. Through ONDC's decentralized and interoperable model, FMCG firms can overcome the constraints of legacy distribution and engage in scalable, data-rich, and inclusive commerce. An imminent opportunity is market access expansion. Manufacturers can use ONDC's design to interface directly with micro and small retailers, informal traders, and underserved consumer clusters. This does away with the need for parallel channel infrastructure and exclusive platform partners. It also removes FMCG giants' physical and economic limitations with regard to last-mile penetration, particularly in remote or economically less viable markets. Firms can use ONDC-compliant apps to gain a foothold in Tier 3 towns and aspiring rural markets by connecting digitally enabled kiranas and emerging small businesses to the company's product catalogue, without relying on capex-heavy distributor networks.

A related opportunity is cost efficiency. Traditional FMCG logistics rely on a multi-tiered structure wherein clearing agents, super stockists, distributors, and sub-stockists each command margins and introduce redundancies. ONDC's modular logistics architecture opens up a network of third-party logistics providers, delivery startups, and fulfilment aggregators, all without owning or managing the end-to-end chain. This disintermediation can reduce operating costs and shorten delivery timelines.

Another strategic shift is in terms of data ownership and visibility. Traditionally, consumer relationships are mediated by large aggregator platforms, which also tend to own data generated from transactions. This curtains the insights available to FMCG firms about customer behavior, pricing elasticity, and regional consumption. On the other hand, ONDC lets participants retain their own transaction & interaction data, enabling advanced analytics, demand forecasting, and micro-targeted product development. Further, the platform allows for dynamic brand building and hyperlocal marketing. Multiple seller-side and buyer-side applications can interact via ONDC, freeing brands from platform-exclusive agreements or template-based merchandising. FMCG firms may partner with local sellers or digital service providers to run customized campaigns, in sync with regional values, languages, consumption patterns, etc. Critical opportunities also exist in inclusive distribution models. FMGC firms can avail ONDC's open participation framework to collaborate with women's self-help groups (SHGs), rural entrepreneurs, and digitally trained youth as last-mile sellers or logistics partners. Reaching economically disadvantaged areas, a company can affirm national development goals like digital inclusion, rural livelihoods, and gender empowerment. Companies like ITC and Unilever, with experience working with SHGs via CSR-linked supply chains, can take advantage of ONDC to scale these initiatives commercially.

The modularity of ONDC also encourages experimentation. FMCG players can pilot new SKUs, test bundling strategies, D2C subscriptions via localized networks, without jeopardizing core distribution. For example, eco-friendly packaging may be introduced in select green clusters, or sachet-based offerings in price-sensitive pockets, with lower risk & better tracking.

ONDC thus presents a synthesis of business expansion and social impact. Its infrastructure can pivot FMCG giants beyond incremental gains towards digital-first, demand-responsive, participatory market engagement. ONDC's technical architecture has potential to shape commerce along distributed, democratized lines. This makes it a cut above the rest.

Potential Challenges and Risk Factors

The challenges that accompany integrating large-scale FMCG players into ONDC's open protocol architecture range from the technological, operational, strategic, to infrastructural. Thorough scrutiny is warranted in order to ensure their long-term viability.

Integration and interoperability with existing systems is a pressing concern. Enterprise Resource Planning (ERP) systems are entrenched in the distribution, logistics, inventory, and finance functions of most large FMCG companies. These systems are optimized for closed-loop, hierarchical supply chains. Considerable workflow re-engineering and data synchronization protocols may be required to integrate them with ONDC's decentralized API-driven architecture.

The issues of data privacy and competitive intelligence are interlinked. Within the marketplace's shared infrastructure, competitors, logistics partners, and small retailers co-exist. Naturally, firms wish to avoid exposing sensitive commercial information. ONDC retains robust safeguards for transactional data, consumer insights, and pricing algorithms. This is vital in categories like personal care or OTC health products, given consumer profiling and behavioral analytics.

Operationally, the non-curated nature of the marketplace is also a point of concern. Platform

aggregators utilize standardized fulfilment and dispute resolution mechanisms to ensure a uniform buyer experience. ONDC's design avoids such centralization, since it cannot adequately address issues like delivery reliability, order cancellations, counterfeit products, and service levels. Models of decentralized governance may be better suited to managing quality assurance across a highly fragmented, federated network.

Resistance from incumbent distributors and trade partners is an expected challenge, given that a well-entrenched network of stockists, sub-stockists, wholesalers power traditional FMCG distribution models, acting as logistical intermediaries and credit providers. They may perceive any move toward direct-to-retailer models via ONDC as a disintermediating commercial threat. Rapid changes in channel strategy are bound to invite pushback, through margin negotiations, reduced compliance, or relationship attrition.

Finally, there is an infrastructural readiness gap in Tier 3–4 markets, markets central to ONDC's democratization agenda. The network is technically designed to bridge the rural-urban divide. This is undermined by uneven on-ground availability of stable internet, smartphone penetration, digital literacy, and local logistics support. FMCG firms may need to invest in last-mile digital enablers, skilling programs, and shared warehousing infrastructure in order to fully leverage ONDC in these areas, they may need to. These are roles that fall outside their traditional operating model.

CASE STUDIES & PILOT EXAMPLES

Going over empirical evidence from pilot initiatives by FMCG giants and ONDC-supported ecosystems, the promise as well as complexities of large-scale integration become apparent.

HUL's ONDC Integration via Shikhar & U Shop

Hindustan Unilever (HUL) has played a pioneering role in FMCG engagement with ONDC. Through its B2B digital ordering app Shikhar, HUL has onboarded approximately 1.3 million kirana stores onto ONDC via a Shikhar Seller module. It was initially piloted in Delhi and Bengaluru with around 60 outlets. The initiative lets local retailers place orders directly on ONDC-based buyer apps, streamlining access to HUL's entire product portfolio (Economic Times, Nov 2023).

Reported outcomes include:

- 33% of HUL's neighbourhood retail sales now via Shikhar
- Early pilots indicate 12% higher order frequency & 9% faster delivery turnaround in rural clusters
- In addition to HUL products, HUL aims to enable kiranas to source a multi-brand catalogue via ONDC, strengthening platform democratization.

These results highlight potential for enhanced market access, order cycles, and scalability via plug-and-play procurement.

ITC's Rural Channel Integration

ITC has also explored ONDC via targeted pilots in Uttar Pradesh and Karnataka. Connecting directly with small retailers for personal care and food items, ITC achieved:

- 7–9% lower cost per unit
- 15% higher fill rate in underserved rural locales compared to traditional channels

This demonstrates ONDC's logistics and pricing transparency can improve rural distribution efficiency. City-Wide ONDC Pilots: Bengaluru, Coimbatore & Lucknow

ONDC's city-level implementation across five key metros has expanded grounds for testing:

- Starting April 29 2022, pilots were launched in Delhi-NCR, Bengaluru, Bhopal, Shillong, Coimbatore
- By early 2023, over 18,000 merchants were live in more than 150 towns/cities
- As of May 2024, ONDC processed 5 million retail orders in a month, with significant expansion in food, grocery, and fashion verticals
- These city-level experiments indicate ONDC's ecosystem readiness and adaptability to diverse urban markets, beyond FMCG.

Kirana Onboarding & FMCG Sales Impact

Enabled through ONDC, digital kirana stores have reported notable improvements:

Using ONDC's interoperable QR code solution, stores can market themselves across social media, WhatsApp, or local channels

LinkedIn posts from ONDC and industry leaders highlight boosts in delivery efficiency, order retention, and competitiveness against quick-commerce options These anecdotes suggest digital onboarding are capable of amplifying resilience and market reach for small retailers.

Thus, an encouraging picture emerges from these indicators. ONDC increases frequency, fill rate, and assortment depth for retailers. It also helps manufacturers reduce cost-to-serve & optimize supply chains based on granular demand signals. Despite the preliminary nature of these findings, positive efficiency, reach, and profitability parameters support a scalable model. Institutional support and technological refinement can help it redefine FMCG distribution in India.

Enabling the Grassroots: ONDC for the Smallest Kirana Stores

The Open Network for Digital Commerce (ONDC); its true impact can only be assessed once it goes beyond digitally fluent urban sellers, and penetrates to the very base of the country's commerce pyramid: millions of small kirana stores, often lacking in literacy and digital training, beholden to a cash economy. To ensure this vast segment can avail the benefits of the ONDC's public digital infrastructure, the following interventions are recommended:

1. Voice-Assisted Seller Apps: ONDC-compatible apps can offer AI-powered voice navigation in local languages such as Hindi, Bangla, Tamil, Bhojpuri, etc. IVR systems should allow users to receive orders, check inventory, or confirm shipments by using the keypad. Integrated text-to-speech and speech-to-text modules can assist stores owner without literacy.
2. ONDC-enabled WhatsApp Ordering: Most kirana owners use WhatsApp for personal use. ONDC apps can tap into this and offer WhatsApp-based catalogues with simple menus or voice notes. WhatsApp Business APIs can provide updates on stock availability, shipment and payment status. Further, onboarding kits containing QR codes can be delivered to kirana stores.
3. Local Digital Saathis: Human facilitation is vital. To this end, community-level youth can be trained (by SHGs, NGOs) as 'Digital Saathis' or support agents to help in onboarding to ONDC, place and track orders, explain basic digital literacy, and work as translators or resolution mediators. This model can take after Bank Mitra and CSC VLE ecosystems, co-sponsored by FMCG companies.
4. Starter Smart Kits: Public and private actors may co-fund and distribute subsidized “starter kits” to eligible kiranas. These kits can include entry-level smartphone with pre-installed ONDC apps, solar power bank, and local language video tutorials stored on an SD card. The kiranas' eligibility may be determined via government schemes like Udyam MSME registration or Jan Dhan account ownership.
5. Retailer Incentives via ONDC: incentives must be simple, without need for KYC uploads or mobile apps. An Aadhaar-linked phone and a PIN should suffice. FMCG firms can provide digital credit, e.g. "₹500 ONDC wallet credit for first 10 transactions," or discount bundles for digital orders. Fintech companies can extend provide small ticket working capital based on ONDC order verification. These benefits should be easy to access, requiring only an Aadhaar-linked phone and PIN—no app downloads or complex KYC processes.

Additionally, awareness campaigns through street theatre, loudspeaker ads, social media may be promoted. E-rickshaw operators and SHG groups can become local logistics partners, with incentives to encourage participation. Importantly, grievance mechanisms must be in place, such as toll-free helplines, missed- call- based ticketing, and escalation pathways to Digital Saathis or FMCG contacts.

Successfully implemented, these measures would ensure, for instance, that a semi-literate shopkeeper from a remote rural cluster will be able to speak his order into a phone, receive the delivery via local SHG partner, and earn a ₹50 bonus in his digital wallet, all without a smartphone. This will increase the footprint and visibility of FMCG brands, and decouple rural commerce opaque intermediaries via open, inclusive, and transparent networks.

Policy & Strategic Recommendations

To actualize the potential of the Open Network for Digital Commerce's (ONDC), coordination is required between government policy, corporate restructuring, technological investment, ecosystem partnerships. Early pilot outcomes and quantitative gains offer tentative direction, but wider adoption and impact depend on structural stakeholder support.

To catalyse integration of FMCG majors with ONDC, incentives can be offered by governments. For instance, tax benefits or digital infrastructure grants may be offered to companies that digitize a minimum threshold of their retail channel via ONDC-compatible platforms. Preferential procurement frameworks may be introduced for FMCG brands that adopt inclusive ONDC-aligned distribution in public programs (such as POSHAN Abhiyaan, ICDS, or school nutrition schemes). Reduction in compliance burdens (for example, simplified GST reporting or fast-track input credit for ONDC-led transactions) can also ease mainstream firms’ reluctance.

Internal supply chain architecture within FMCG companies also requires restructuring. Traditional distribution models, although extensive, are not designed for real-time demand responsiveness or modular interaction. As companies transition from linear, distributor-centric models to agile, node-based systems, kiranas, SHGs, and digital retailers can act as dynamic order points. This may entail creating hybrid logistics stacks that can toggle between conventional warehousing and ONDC-integrated fulfilment partners, using distributed micro-fulfilment centres and shared warehousing for better regional coverage. Incentive structures can be devised for frontline sales teams to reward digital order onboarding and ONDC-linked performance metrics.

Technology can enable this transformation. FMCG firms must invest in API standardization, open-data interfaces, and cloud-native order management systems that can speak the language of ONDC. Real-time data ingestion, demand heat mapping, and automated replenishment can enable predictive supply. Companies can leverage ONDC's architecture to employ low-cost, location-aware retailer apps, QR-based order points, and plug-and-play SKU catalogues that can be embedded into any seller app on the network. Accommodating low-bandwidth and regional

language support into their design will ensure relevancy in Tier 3–4 markets.

Finally, stakeholder collaboration will be essential. Startups specializing in kirana digitization (e.g., 1K Kirana, SuperK), last-mile logistics, and rural fintech must be engaged as ecosystem partners. FMCG firms may co-create bundled offerings which provide digital credit, FMCG distribution, inventory insurance in a single ONDC transaction. NGOs and SHGs can be mobilized for rural outreach, capacity building, and onboarding assistance, particularly in low-literacy markets. A tri-sector alliance of government, private sector, and civil society can ensure digital commerce avoids the exclusionary patterns of the past, and creates a new kind of economic participation at scale.

These recommendations are not meant as simple tactical adjustments, but to open up novel conceptualizations of FMCG distribution, data ownership, and market access in India. Adequate policy scaffolding, technological infrastructure, and collaborative intent will ensure ONDC becomes the backbone of a truly inclusive commerce ecosystem, and FMCG giants its primary accelerators.

CONCLUSION

With the Open Network for Digital Commerce (ONDC), India's digital economy finds itself at the precipice of a great reconfiguration. The ONDC heralds a new era of distributed value creation, with open, interoperable ecosystems where commerce is decoupled from platform monopolies. The FMCG sector has historically relied on physical scale, channel control, and market penetration. The ONDC represents a strategic inflection point. Its architecture can address and resolve the industry's evolving concerns: deeper rural access, cost rationalization, agile supply chains, and consumer insights.

This paper has made use of case studies and quantitative evidence, to demonstrate the gains already reported by early adopters like HUL, ITC, and Dabur in terms of order frequency, cost efficiency, demand visibility. Kirana onboarding, real-time analytics, and decentralized logistics are emerging realities. At the same time, challenges like legacy system incompatibilities, stakeholder resistance, and infrastructural asymmetries show the complexities of making this transition. Actualizing the ONDC-FMCG synthesis calls for a multipronged strategy, ranging from policy incentivization, corporate ERP & logistics reinvention, to collaborative innovation across startups, NGOs, digital service providers, etc.

The future of India's digital commerce encompasses networks that empower the smallest actors: retailers, women entrepreneurs, rural sellers. They will be able to participate on equal terms with industry giants. More than mere commercial beneficiaries, FMCG companies are envisioned as enablers of economic decentralization and custodians of market democracy. With India on the cusp of a new commerce revolution, the real test is not the number of companies that may integrate with ONDC, but the magnitude of communities transformed by it. "The greatness of a digital economy will not be judged by how efficiently it scales, but by how equitably it distributes access."

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