



# Digital Marketplaces and Indian Agriculture: Beyond the Direct-to-Consumer Mirage

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No initiative of the government can be considered successful until rural areas have adopted it completely. The agriculture sector is the backbone of the Indian economy, contributing almost 50% of our total GDP. The Government of India, being optimistic, announced to double the income of Indian farmers by the year 2022. 2022 has passed, and we are still almost the same with our farmers' conditions. One hurdle in doubling the farmers' income is the supply chain. The majority of Indian farmers have marginal and small landholdings, constituting around 86% of total farmers. The major part of farmers' income goes to various middlemen present in the supply chain of transporting agricultural produce from farmers to consumers. On the other hand, digital marketplaces have successfully applied the model of D2C (Direct to Consumer) model, quick and super quick e-commerce. This approach of digital marketplaces has almost reduced middlemen to zero, and has directly connected producers to the consumer efficiently and effectively. Since 2019, entrepreneurs in India have shown interest in the unorganised agricultural sector. In 2019, India had a few hundred registered agritech companies, which grew to over 6000 companies with almost \$ 1.28 billion in venture investment by the end of the financial year 2022-23. Introduction of e-NAM (e-National Agriculture Market) by the Indian Government, onboarding 1,361 mandis from all states, shows the interest of the government. Even after these initiatives, the farmers are receiving only 33% of the consumer price, while leftover part still goes to the intermediaries. This imbalance in the consumer price distribution questions the credibility and efficiency of the digital marketplace for selling agricultural produce.

The central argument in favor of D2C models is disintermediation—the removal of middlemen to ensure higher farmer earnings. Evidence does show that reducing intermediaries can improve efficiency and profitability. For instance, studies of milk marketing channels suggest that farmers earn more when fewer layers of traders are involved, and markets become more efficient in such cases. Research on potato farmers in West Bengal revealed that local traders captured 28–38% of the consumer price, indicating farmers could earn 65–83% more by accessing wholesale markets directly. However, this narrative is far from universal. Another study found that fruit and

vegetable producers often fetched 13–73% higher returns in regulated Agricultural Produce Market Committee (APMC) mandis compared to private sale channels, illustrating the contradictory nature of agricultural marketing structures. These findings highlight that Indian agriculture is too diverse and complex for one-size-fits-all solutions like pure D2C. While some success stories exist—such as Deep Rooted securing \$12.5 million in funding or Telangana’s Saagu Baagu initiative helping farmers double their incomes—these remain exceptions. They cannot be treated as scalable models that work across crops, regions, or farmer groups.

The transition from traditional channels to D2C also places enormous burdens on farmers. Unlike traditional markets where intermediaries handle aggregation, transportation, and sales, D2C shifts the entire responsibility for supply chain management onto farmers. This includes storage, logistics, customer acquisition, and even after-sales services. For smallholder farmers already dealing with uncertainties of weather, pests, and price volatility, these added responsibilities are often unmanageable. A major structural barrier is India’s weak cold chain infrastructure. Current facilities cover only about 10% of perishable produce, leading to post-harvest losses ranging between 20% and 40%. Without temperature-controlled storage and reliable logistics, many farmers cannot sustain D2C operations, as perishable items often spoil before reaching urban consumers. Alongside this, the digital divide compounds the challenge. As of 2023, only about 29% of rural households had internet access, and a 2022 World Bank survey showed that nearly one in four rural adults lacked basic digital skills. These limitations mean that the very farmers who stand to gain the most from digital platforms are also the least equipped to use them.

Even when farmers overcome technical and infrastructural hurdles, customer acquisition costs make D2C challenging. In regulated mandi systems, farmers are guaranteed a market, but under D2C they must invest in marketing, branding, and sales channels to attract consumers. For smallholders with limited capital and little marketing experience, these costs can erase the benefits of bypassing middlemen. This reveals a key reality: the problem is not simply the presence of intermediaries, but whether these intermediaries add value or extract it unfairly. Instead of eliminating them altogether, more efficient and farmer-friendly intermediation may hold the key to agricultural transformation.

In fact, agritech startups like Ninjacart and WayCool are already demonstrating that technology-enabled supply chain managers can improve outcomes. These companies build organized logistics systems, connect farmers to multiple buyer networks, and minimize wastage through better planning and cold storage. According to McKinsey, a fully developed agritech ecosystem in India could raise farmer incomes by 25–35%, which is comparable to the gains expected from D2C models but without placing the logistical and financial burden solely on farmers. In this context, Farmer Producer Organizations (FPOs) emerge as critical enablers. By aggregating the production of smallholders, FPOs allow farmers to achieve economies of scale, pool resources, and strengthen bargaining power. The government’s encouragement of FPOs, with thousands already registered on e-NAM, signals recognition of their

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transformative potential. By acting collectively, FPOs can reduce the individual risks of D2C marketing while still ensuring better prices through aggregation and negotiation.

The e-NAM experience also offers valuable lessons. While the farm-gate trade value on the platform reached ₹79 crore in 2023-24, it remains a fraction of the total activity. The more telling development is that the average number of bids per lot increased from 1.8 to 4.8 over time, suggesting that digital platforms are improving competitive price discovery. This shows that the real value of digital marketplaces may not lie in facilitating D2C trade, but in strengthening competition and transparency in existing systems. Rather than bypassing mandis, digital platforms can reform them by reducing collusion among traders and giving farmers better price information.

For digital agriculture to succeed, government support must go beyond creating online platforms. Foundational infrastructure is vital. The proposed AgriStack—a unified database of farmer and land records—holds potential for designing customized services in credit, insurance, and market access. But digital records alone will not solve structural issues. Massive investments are needed in cold storage facilities, rural internet penetration, and last-mile connectivity to enable farmers to participate meaningfully in digital trade. Similarly, financial and institutional support for FPOs can make collective marketing more sustainable. The repeal of the Farmers Produce Trade and Commerce Act, 2020, also illustrated that legislative reform alone is insufficient without parallel improvements in physical and digital infrastructure.

Equally important is capacity building among farmers. Many struggle with the basic requirements of online trade, including order management and digital payments. Surveys show that nearly 40% of farmers have difficulties managing online orders due to lack of training. Without large-scale digital literacy and market-orientation programs, platforms risk excluding the very farmers they are designed to empower, reinforcing existing inequalities instead of alleviating them.

The evidence thus suggests that while D2C models appear attractive in theory, they face major limitations in India's agricultural context. The persistence of farmers receiving low shares of consumer prices, despite the proliferation of digital platforms, indicates that structural bottlenecks cannot be solved by technology alone. Real empowerment requires moving beyond the simplistic idea of removing middlemen toward a broader agenda of value chain optimization. This involves creating efficient supply chains where intermediaries—whether private companies, cooperatives, or FPOs—add value through logistics, storage, and marketing while ensuring fair returns to producers.

In the context of the agricultural supply chain, the intermediaries should not be seen as evil, as without them, the delivery of produce to consumers is impossible. Intermediaries must understand their role, and the initiatives should be made to provide actual price rates to the farmers to avoid their exploitation. Digital marketplaces can support this by providing real-time price information, enabling the bidding process, and making

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the process transparent. The role of the digital marketplace should be complementary, supporting and addressing the flaws in the traditional systems.

The D2C model can not be considered a failure in the field of agriculture. We need to focus on the reasons for its failure. Expanding our infrastructure (cold chains, affordable logistics), spreading digital literacy and making the sector more competitive can help all stakeholders to grow. To double the income of farmers, all the stakeholders (Government, entrepreneurs, farmers' organisations, NGOs, and intermediaries) need to play their role.