ONDC
Open Network for Digital Commerce

Knowledge partner
McKinsey & Company

Democratising digital commerce in India

An open network for inclusive, competitive marketplaces

Sub-Report on Agriculture

May 2023

This booklet is an excerpt from the Agriculture section of the report 'Democratising Digital Commerce in India' and is based on joint research conducted by ONDC and McKinsey & Company. The complete report covers 11 sectors. To access the full report, please use the QR code provided below.

Agriculture

India has a large and growing agricultural sector. The second-largest agriculture producer in the world after China, India is the world's largest producer of milk, mangoes, bananas, papayas, and pulses.[1] In fiscal year 2022, the sector had a total market size (across inputs and outputs) of about $500 billion. Agricultural outputs (predominantly crops and livestock) account for more than 90 percent of the total market, while agricultural inputs (including fertilisers, agro-chemicals, seeds, and other farm mechanisation inputs) make up the rest.[2]

[1] *India's century: Achieving sustainable, inclusive growth,* FICCI and McKinsey, December 2022.
[2] Agricultural statistics at a glance 2021, Government of India, May 17, 2022.

Key challenges across the value chain

Despite the industry's size, value chains are highly fragmented and inefficient, with minimal digital penetration. Value chain structures and stakeholder margins vary significantly among crops and types of produce across both input and output value chains, reflecting a lack of standardisation across the sector (Exhibit 1). Moreover, the large number of intermediaries—aggregators, distributors, mandis, agents, and retailers—adds to inefficiencies and reduces productivity for farmers, a cost that often gets passed on to consumers in the form of higher prices.

Confronted with these challenges, India's vast population of farmers experiences pain points and barriers to digital adoption across every stage of the farming cycle—from financing and risk mitigation to sowing and planting, harvesting, and selling their products. All these barriers are exacerbated and underpinned by a scarcity of trust among farmers and a highly localised environment that impedes digital adoption at scale.

Financing and risk mitigation

Without access to formal credit, many of India's farmers rely on informal loans from local money lenders or retailers, with interest rates that can be up to ten percentage points higher than those associated with formal credit.[1] The lack of transparency and effective collection mechanisms makes it difficult for banks to expand formal credit through digital channels. Long gestation periods exacerbate the cost of credit, as farmers must wait until after harvest to pay back the loans that they took out before planting. Furthermore, many Indian farmers do not have any type of crop insurance, making them particularly vulnerable to bad harvests and unforeseen weather events.

Planning, planting, and in-season care

Farmers often have limited access to the information, commodities, and inputs that they need to optimise production. Many do not have critical information about weather forecasts or knowledge of which tools or fertilisers to use. Access to essential commodities and equipment, such as hybrid seeds and tractors for rent, remains limited. Meanwhile, long and complex legal processes impede the expansion of agricultural input retail outlets (for example, it can take dozens of permissions to set up an organised rural retail outlet). Farmers continue to rely on physical demonstrations and touch-and-feel assurance when purchasing inputs, which creates an additional barrier to digital adoption.

Harvesting

Even though India is one of the largest agricultural producers in the world, its farm mechanisation rate is below 40 percent—well short of the United States (95 percent), Brazil (75 percent), and China (57 percent).[2] The lack of cold-chain logistics and facilities also creates inefficiencies in the supply chain: up to 40 percent of farm produce is wasted before food ever reaches the customer.[3]

Selling

When it comes to selling their products, farmers struggle with low price visibility, low margins, and low bargaining power in hyperlocal markets. They often lack accurate and up-to-date information on prices in other markets. Most produce is sold through multiple parties and intermediaries, which means farmers may earn significantly less than the retail price of their crops. As a result of geographic restrictions, farmers often have no choice but to sell at their local mandi, which in turn further diminishes their bargaining power. Moreover, the lack of an effective quality assurance mechanism and complex legal frameworks that vary across states and districts make it difficult to digitalise the transport and sale of goods.

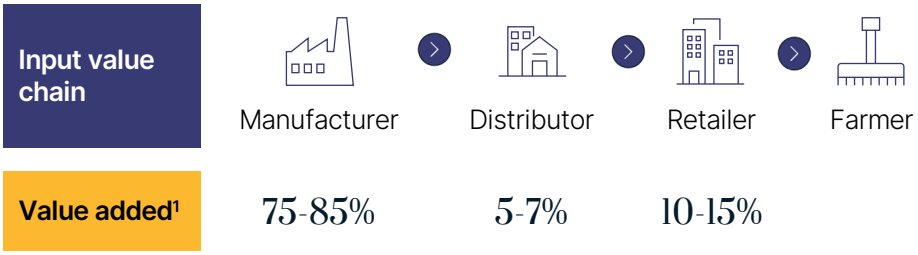
1 *India's century: Achieving sustainable, inclusive growth,* a joint report from the Federation of Indian Chambers of Commerce & Industry (FICCI) and McKinsey, December 2022.
2 Rituraj Tiwari, "Focus on farm mechanization to cope up with increasing food demand," *Economic Times*, January 31, 2020.
3 *Achieving sustainable, inclusive growth*, December 2022.

Exhibit 1

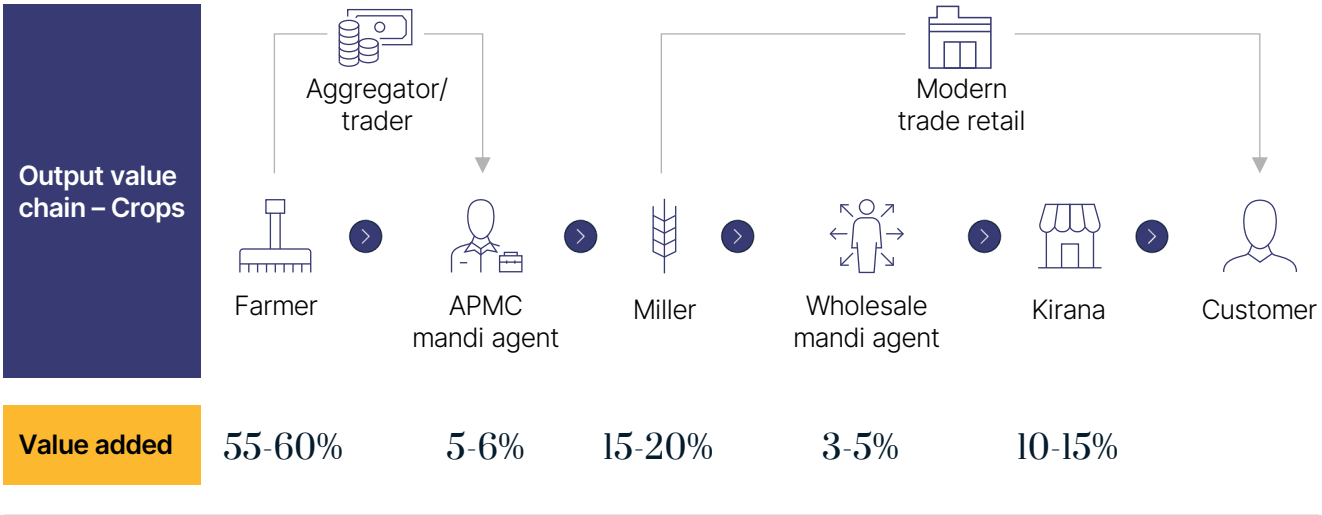
A highly fragmented value chain poses challenges, with minimal digital penetration.

Value chains and margins vary between different inputs and outputs

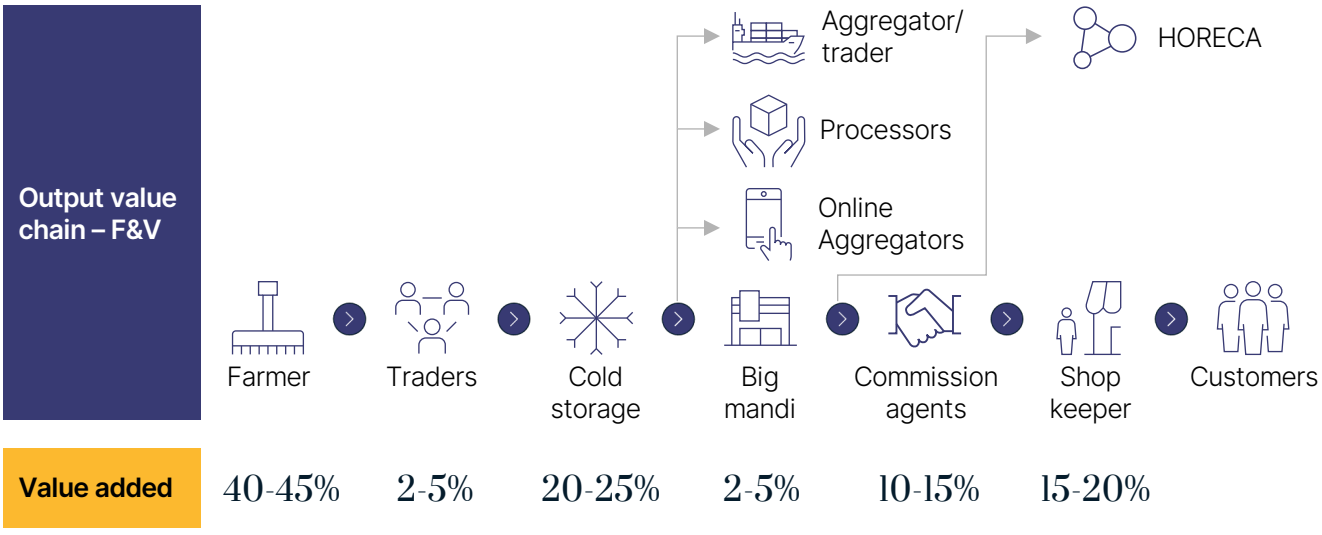
Use case: Agro-chemicals



Use case: Non-basmati rice



Use case: potato



[1] % realisation of final retail price.

How ONDC can unlock value for the sector

While existing platforms have made progress toward alleviating these pain points, they have not yet built the scale to provide an end-to-end digital offering for farmers and customers. To enable value creation, interventions must address farmers' pain points and allow them to improve productivity. This would create economic surplus that can then be distributed across the value chain. By cutting across current platform archetypes, ONDC has the potential to enable solutions to many of these challenges at scale and transform the value chain across the entire industry.

Four use cases illustrate how ONDC can accelerate digital adoption and unlock value across India's agricultural sector:

1. Accelerate direct-to-farmer commerce

ONDC could enable direct linkages between farmers and other stakeholders across both agricultural input and output value chains. On the input side, farmers could purchase directly from manufacturers—potentially resulting in higher margins for manufacturers and enabling farmers to make more informed product choices, which could lead to improved yields and better on-field outcomes. On the output side, farmers could sell directly to large businesses, retailers, and individual consumers—which would minimise wastage, reduce touchpoints in the value chain, and improve farmer profits. ONDC could also bring together multiple platforms that operate in niche areas, widening the farmer base and the potential market for sellers. By digitalising the certification and licensing process, ONDC could make it easier for retailers to secure authorisation and tap into the open network.

2. Improve transparency, traceability, and efficiency

By increasing the transparency and reach of the market, ONDC could enable better price discovery, more efficient logistics, and a higher degree of traceability across the value chain:

- **Price discovery.** The open market could allow farmers to gain price visibility across multiple seller apps and choose the most affordable inputs. Similarly, consumers and retailers could gain price transparency among sellers without solely relying on mandi pricing.
- **Logistics efficiencies.** ONDC could create efficiencies and prevent waste by facilitating the discovery of cold-chain infrastructure and on-demand logistics providers. Sellers could extend their geographic reach by accessing a wider range of distribution partners and options for hyperlocal delivery in underserved markets.
- **Traceability.** The open network could improve product traceability by enabling end-to-end tracking of produce from farms in the case of exports.

3. Accelerate better access to formal credit

ONDC could help bridge the formal credit gap by improving farmers' access to credit, innovating new financing structures, and digitalising credit functions. Through the open network, farmers could discover multiple formal credit sources from both banks and NBFCs with fewer geographic constraints, instead of relying on retailers for informal credit. ONDC could spur innovative financing structures—including operations-based funding, credit issued against transaction history on the network, and credit based on nonconventional markers (such as PM Kisan credit, subsidy flows, and crop insurance debit). Integrations with existing solutions (such as Agristack) can also leverage farmer data to inform credit decisioning. Moreover, ONDC could help digitalise and simplify the credit journey for customers by eliminating the need for bank branch visits and streamlining documentation requirements.

4. Improve on-farm efficiency

Bringing farmers into the digital commerce marketplace could increase their access to better advisory and forecasting tools. With more access to information and more opportunities to connect with market players (such as agtech start-ups), farmers could access personalised crop advice and incorporate the latest tools and techniques to increase yields, reduce input costs, boost productivity, and improve sustainability. Through the ONDC network, farmers could also gain access to better demand forecasting, weather forecasting, and pest attack forecasting. With these, farmers would be able to optimise their input requirements; improve the timing of their irrigation, fertiliser, and pesticide purchases; and minimise the loss of crops due to pest attacks.

Potential impact on a typical farmer

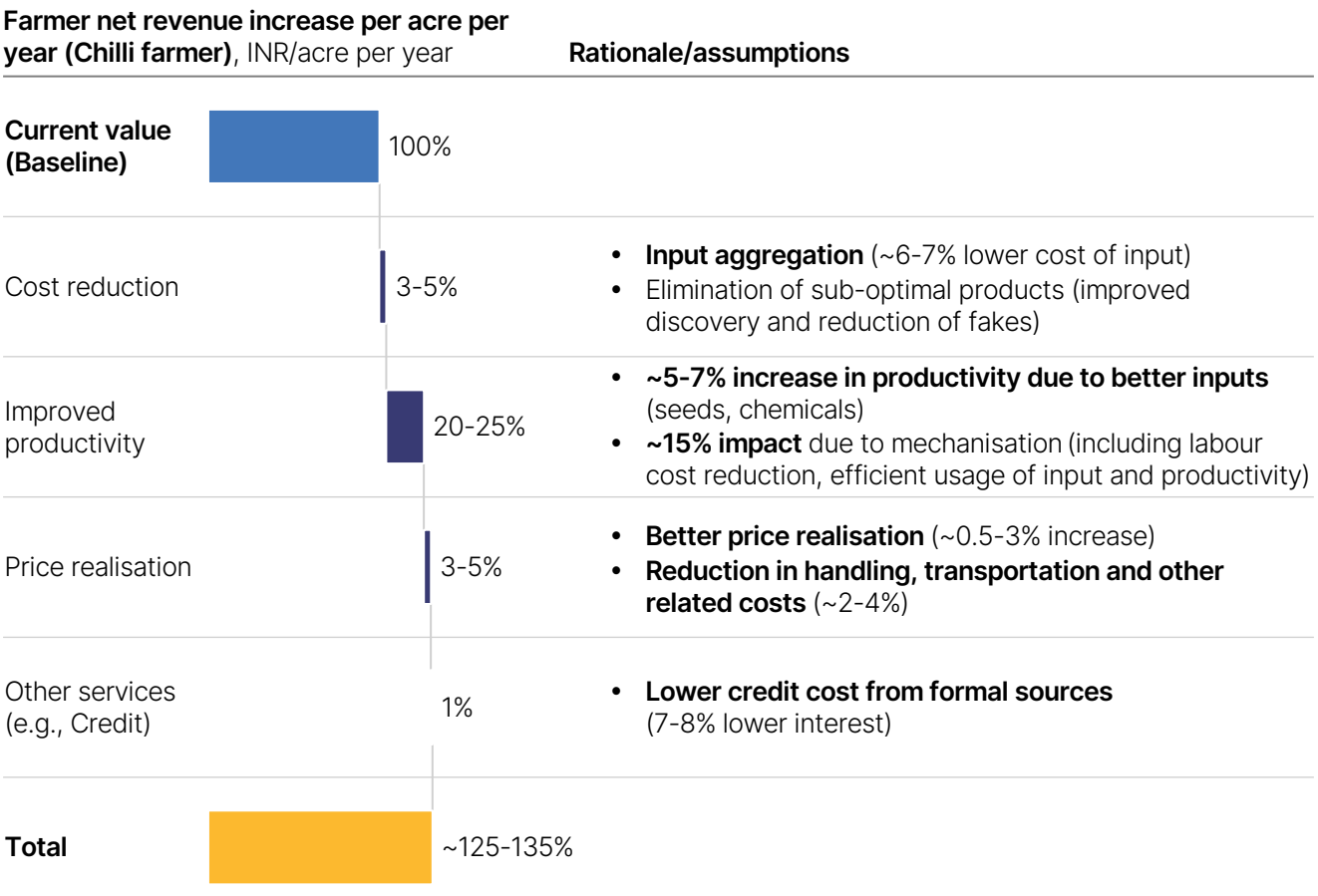
As a result of the four use cases described above, ONDC could increase a farmer's net income by 25 to 35 percent (see Exhibit 2 for an illustrative example). This additional revenue is derived from four distinct levers—cost reductions, improved productivity, price realisation, and other services.

Challenges and considerations for successful adoption

ONDC and network participants will need to address user behaviour and ecosystem challenges to drive adoption and transform India's agricultural sector. The critical challenges and considerations to successfully implement each of the four use cases are as follows:

Exhibit 2

ONDC could increase a farmer's net income by 25 to 35 percent.



Source: Farmer survey, deep structured farmer interviews, interviews with agronomists, traders, retailers, off-takers, press search

1. Accelerate direct-to-farmer commerce

ONDC participants will need to overcome low digital adoption among farmers and build trust in the digital ecosystem. Existing informal networks have a low cost of doing business; digitalising direct linkages may prove to be expensive. Furthermore, ONDC may face pushback from stakeholders within the existing value chain.

To overcome these challenges, buyer and seller apps will need to invest in education and incentives for digital adoption. Seller apps can partner with farmer producer organisations (FPOs) to onboard farmers to the network, while buyer apps can onboard modern retailers and consumers who are willing to purchase directly. Third parties can set benchmarks and standardise parameters for quality assurance. Meanwhile, government intervention can help streamline statewide licensing processes and enable pan-India transactions through the network.

2. Improve transparency, traceability, and efficiency across the value chain

Today, buyers and sellers face limited options and low discoverability for key infrastructure (such as cold-chain logistics). Additionally, most inputs are purchased on demand in response to an immediate need, and farmers may be unwilling to wait multiple days for delivery, even if it is more cost effective.

Local players can help fill in the gaps by setting up hyperlocal logistics networks, while seller apps and third parties can provide services that enable the end-to-end tracking of produce across the value chain. Additionally, the integration of advisory services with ONDC can help farmers optimise their planning and smooth demand for inputs.

3. Provide access to formal credit

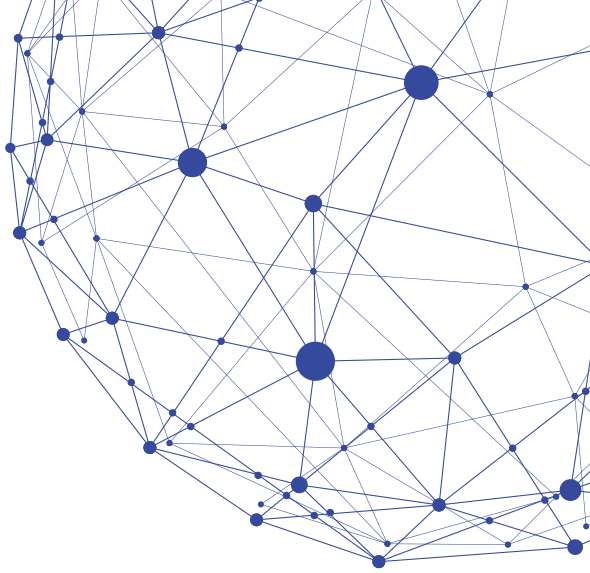
Many farmers rely on informal lending channels that have been built through relationships and trust. In the shift from informal to formal credit, underwriting challenges may persist as farmers find it difficult to access and establish their credit history. The lack of collections facilities and infrastructure makes it more difficult for financial institutions to expand formal credit access.

Buyer and seller apps both have a role to play. Buyer apps can invest in embedded financing for inputs and educate farmers on the adoption of formal credit. Seller apps can invest in the human resources and capabilities to enable collections.

4. Improve on-farm efficiency

While new tools and techniques can help farmers improve efficiency, farmers will need some initial support and examples to understand why and how to change their farming practices. Personalised advisory services are difficult to scale (as they require access to data including location and agro-climatic conditions) and difficult to monetise (because most of the economic value is indirectly generated through inputs and outputs sold on the back of advisory). Additionally, best-in-class research is currently neither digitalised nor centralised.

The government can take the lead on digitalising the latest precision farming research and providing access to all stakeholders. Advisory service providers can engage in partnerships (for example, with input players on the network) to cross-sell and monetise their services. Finally, platforms can contribute by developing local language interfaces and feet-on-street tactics to boost adoption among farmers.



Getting on board with ONDC

ONDC holds the potential to create open, inclusive, and competitive marketplaces in the virtual world. It will be important for companies to carefully evaluate the options available to them as they consider entering this space. This could help them to identify plays that maximise benefits from the immense opportunities unlocked by the open network.

As company leaders look to make the most of the opportunities ONDC offers, they could explore the possibilities across two themes. First, they could determine which use cases have potential to scale fast and which would take longer to yield results. And second, they could evaluate where they are best positioned to play—through the lens of the market opportunity, their own capabilities, and the consequent feasibility of investing in specific use cases. This could support them in making the most relevant investments to achieve their company's strategic objectives.

Assessing scalability

As a market maker keen to create and democratise opportunities for all participants, ONDC could catalyse a range of business opportunities in the short, medium and long term (Exhibit 3).

This answer emerged after analysing three indicators of potential to scale:

— Short term: Digitisation of existing hyperlocal goods and services

— Medium term: Scaling up and innovating in D2C businesses

— Long term: Digitising new use cases for ONDC-first business models, especially in B2B

As companies think about use cases they could prioritise, it would make sense to look at their options through three lenses:

1. The use case should solve an unsolved problem.
2. It should have a ready ecosystem (for example, digitalised supply chain, standardised goods and services, or ease of logistics and fulfilment).
3. It should be economically viable.

Exhibit 3

Use cases in the short term could prove the most beneficial for driving early adoption and scale.

Not exhaustive

Short term

- Accelerate digitalisation of rides (cabs and rickshaws)
- Ticketing and integration of public transport
- Access to credit for consumers, manufacturers, and distributors/retailers
- Logistics as a service
- Branded building materials marketplace
- Accelerate digitalisation of restaurants
- Strengthen D2C channel for brand owners and manufacturers

Medium term

- Self-employed services (both blue and white collar)
- Omnichannel commerce in fashion and electronics
- Marketplace for local sellers/artisans
- Scaling offerings beyond credit – insurance and investment products etc.
- Hyperlocal grocery and pharma delivery
- On-boarding P2P home chefs
- Direct-to-farmer sales (input and output)

Long term

- eB2B sourcing for large companies and MSMEs
- Digitalisation of refurbished products
- Evolution of eB2B to enhance linkage between distributors and retailers
- On-boarding P2P homestays
- Digitalisation of hotels in Tier 2+ cities

Identifying the best-fit use case for a company

Companies looking to develop innovative business models that tap the open network can examine the opportunity against two considerations: how to participate immediately in a fast-developing space, and how to reimagine their business for an open network and its possibilities.

Businesses need to zero in on the most relevant use cases that map to their chosen stance as a shaper or a fast follower. They can accordingly identify a pool of investable resources to help them pursue the opportunity.

If the collective investments of companies across industries can support the expansion of ONDC, they could unlock the full potential of digital commerce for buyers, sellers, third-party providers, and India as a whole. Companies and entrepreneurs must carefully consider several strategic questions:

— **Evaluate the opportunity.** How will an open network disrupt the sector? What is the problem that it will solve, and for whom? Which are the most relevant use cases for the business? What are the potential benefits of addressing this problem? What are the potential risks and challenges in implementing these use cases?

— **Identify the capability required.** Which role (e.g., seller, buyer, tech service provider, etc.) is the company best positioned to play? What are the key capabilities needed to execute the use case? What are the resource requirements (for instance, people, time, or money) in building out these use cases? How should governance be managed, including engagement with the ONDC core team and network participants?

— **Evaluate feasibility of the use cases.** When should a company decide to implement or pilot a use case? Should the organisation be a leader or a fast follower? What are the feasibility considerations for executing the use case (for example, market, financial, or legal)? What should be the pilot structure for prioritised use cases including the initial investment and scale-up milestones?

ONDC presents a unique avenue for India to revolutionise its digital commerce landscape and set an example for the world, much as it did with UPI. With vast potential for a robust buyer and seller ecosystem, ONDC represents an opportunity that arises once in a decade. Stakeholders—government, industry players, and consumers—can determine how to seize this 'tech-ade,' putting their best, most innovative selves forward to democratise digital commerce for all.

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