FUELLING ENTREPRENEURSHIP AND INNOVATION WITH THE OPEN NETWORK FOR DIGITAL COMMERCE

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Acknowledgements

Disclaimer

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Design: Usha Sondhi Kundu; *cognitive.designs@gmail.com*

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Executive Summary

The ONDC has immense potential to democratise access to e-commerce for sellers of diverse products, ranging from groceries to handicrafts. The technology's principles of interoperability and unbundling will be instrumental in encouraging entrepreneurial growth and innovation, as was observed in the computer software and recorded video content industries in other parts of the world. In short, the ONDC's unbundled, open and interoperable architecture will favour the entry of specialised entrepreneurs across the value chain.

By making e-commerce inclusive and democratic, the ONDC will fuel key trends in India's e-commerce landscape. Each of the trends that will contribute to the emergence of new business opportunities, enriching the landscape with numerous, diverse players at three levels: end-sellers (erstwhile non-digital sellers commencing their e-commerce journey), core enablers (such as logistics service providers, warehousing services and last-mile delivery agents) and facilitators (for smoother digital onboarding and access, such as app developers and compliance assistance agents).

However, some risks can come up on the network for buyers and sellers, which can impede the growth of entrepreneurship and prevent inclusive adoption of the network. Protection of buyer and seller interests, improving awareness, building digital skills, ensuring data privacy and network maintenance are some of the areas of concern. The not-for-profit sector can play a role in mitigating some of the risks around awareness, skills, cybersecurity and network upkeep, by mobilising funds and talent. Multiple stakeholders, including the government and technocrats, can contribute immensely in encouraging widespread adoption of the ONDC and enabling a robust monitoring and governance framework, to help the network thrive.

Open Standards, Unbundling and Interoperability Deliver Convenience to Users and Drive Entrepreneurial Activity

The pilot launch of the Open Network for Digital Commerce (ONDC) in April 2022 had media outlets buzzing with abstract terms such as interoperability, open standards, protocols and unbundling. While many of us may be unaware of the technical definition of these words, it is interesting to note that most of us experience the importance of these concepts almost daily. We take advantage of unbundling whenever we use Spotify to digitally purchase or download one song instead of an entire music album. Each time we send an email from our Gmail account to a YahooMail user, we benefit from open standards and interoperability (or compatibility) in the World Wide Web and email protocols. The economic value of compatibility in communications networks has been modelled by Katz and Shapiro (1994), who show that consumer welfare increases with complete interoperability.

Besides the benefits to consumers, unbundling and interoperability are important for entrepreneurial growth and innovation. When a value chain is unbundled or disintegrated, specialised intermediary firms emerge to supply separate components of a previously integrated production process. Open standards and modular (flexible) designs enable interoperability, reducing the frictional cost of having work done by multiple agents, thus making vertical specialisation and disintegration more viable. This boosts entrepreneurial activity and facilitates the entry of new firms. This has been substantiated by Farrell and Saloner (1986) who show that interoperability between computer hardware and software allows software developers to access a larger market, which incentivises the number of entrants who deliver a greater variety of software components.

The example of the recorded video content sector clearly demonstrates the relation between entrepreneurial opportunities and vertical disintegration achieved through open standards. In the US economy, this industry saw the emergence of entrepreneurial opportunities driven by vertical disintegration, resulting in thousands of new firms offering specialised products and services (Funk 2012). The Japan Victor Company (JVC)'s Video Home System (VHS) launched in the 1970s issued lots of licences for its technology allowing many manufacturers to produce VHS recorders and tapes. The number of video recorder manufacturers increased from 10 to over 50 within a decade of the introduction of the VHS (Funk 2012). The popularity of VHS format due to its compatibility across a wide range of recorders was key in driving up the number of players in home movie production and video rental services. By 1995, there were more than 30,000 video rental stores in the US (Funk 2012). In contrast, Sony patented its BetaMax technology, disallowing competitors from using it. Clearly, JVC's strategy to adopt open standards enriched the industry with diverse players in addition to bringing profits to the company.

Closer home, the introduction of the interoperable Unified Payments Interface (UPI) has fuelled entrepreneurial activity in the fintech space in recent times. It has also created jobs in
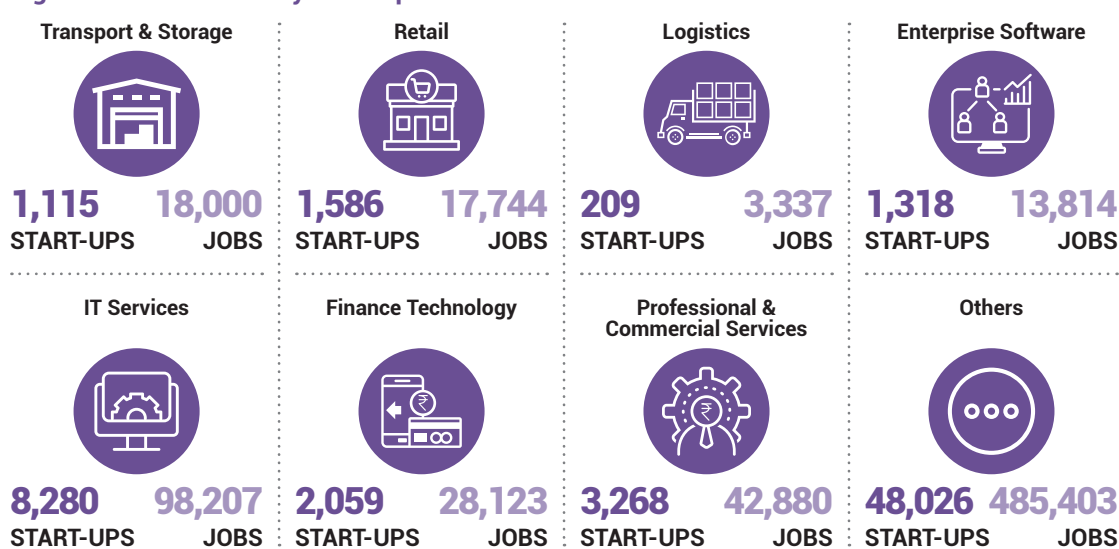
rural areas by engaging business correspondents to provide banking and financial services where bank branches do not exist. As of 2017, more than 5 lakh business correspondent agents were engaged by banks in rural areas (Panagariya 2022).

Entrepreneurship is the Engine of Economic Growth

Entrepreneurs are crucial for the economy as they create economic value by generating employment, encouraging innovation and solving socio-economic problems. They engender productivity growth and produce high-quality innovations by introducing new products and technology, or creatively using existing products and technologies.

Over 65,000 start-ups, which registered with the Start-up India initiative between 2016 and 2022, have created more than 700,000 jobs (DPIIT 2022). Previous research by Davis and Haltiwanger (1992) shows that younger firms have higher net employment growth rates, indicating their contribution to job creation. The U.S. Census Bureau's Business Dynamics Statistics (BDS) corroborate this by reporting that firms aged upto five years generate approximately 43% of new jobs in the US (Badal 2010). A study of OECD countries finds that a 1% increase in business ownership rate (a proxy for entrepreneurship) would increase the private sector research and development expenditures (a proxy for innovation) by 5.9% (Isik et al. 2016). Using the Kauffman Index of Entrepreneurial Activity, Hafer demonstrates that one standard deviation in entrepreneurship is associated with a 0.4% annual increase in real per capita income (Hafer 2011). Another study of 22 OECD countries concludes that there exists a positive correlation between productive entrepreneurship (as measured by the degree of innovativeness) and economic growth (Salgado-Banda 2006). Clearly, entrepreneurship is an important driver of growth and development in the economy, and warrants encouragement.

Figure 1: Job creation by start-ups across industries

Transport & Storage	Retail	Logistics	Enterprise Software
1,115 START-UPS 18,000 JOBS	**1,586** START-UPS 17,744 JOBS	**209** START-UPS 3,337 JOBS	**1,318** START-UPS 13,814 JOBS

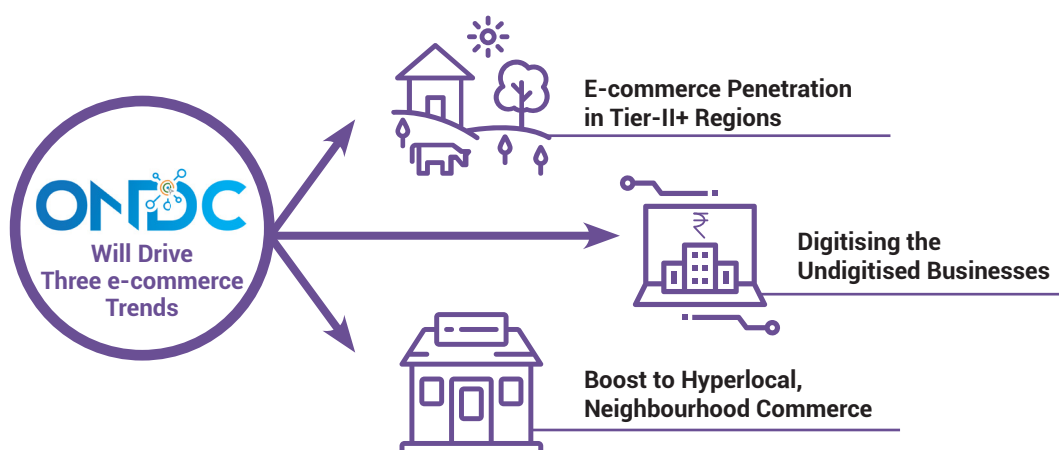| IT Services	Finance Technology	Professional & Commercial Services	Others
8,280 START-UPS 98,207 JOBS	**2,059** START-UPS 28,123 JOBS	**3,268** START-UPS 42,880 JOBS	**48,026** START-UPS 485,403 JOBS

(DPIIT 2022. Employment figures have been self-reported by start-ups as on 14th March 2022.)

ONDC's Network Push to E-commerce will Encourage Innovation and Entrepreneurship

The ONDC's network approach to e-commerce is guided by the principles of interoperability and unbundling, in contrast to the currently siloed design of e-commerce platforms. We posit that this reimagining of the digital commerce ecosystem will drive innovation and entrepreneurship across the ecosystem. In addition to widening market access for smaller undigitised merchants such as artisans, kirana stores and nano-entrepreneurs, the ONDC will provide fertile ground for value chain intermediaries and innovators to emerge and provide support services for the end seller. The complex e-commerce retail value chain entails several intermediate steps such as cataloguing, logistics, storage, warehousing, packaging, inventory management and so on. Large digital commerce marketplaces often bundle many of these services, appropriating a substantial chunk of the value added. In principle, however, there is significant scope for specialised players to enter the value chain and offer disintegrated services. The ONDC seeks to implement this idea in practice by 'unbundling' the value chain through its open protocol-enabled architecture based on interoperability. This vertical disintegration will create space for innovative start-ups to emerge, thereby contributing to employment and inclusive economic growth.

The ONDC carries the potential to fuel key trends in India's e-commerce landscape. These emerging trends will create prospects for entrepreneurs, who will be enabled by the network's guiding principles of inclusivity and democratisation to make the most of these opportunities. We identify the trends that will contribute to the emergence of new business opportunities, enriching the landscape with numerous, diverse players. We hypothesise that each trend will spur entrepreneurial activity at three levels: end-sellers, core enablers (such as logistics service providers, warehousing services and last-mile delivery agents) and facilitators (for smoother digital onboarding and access, such as app developers and compliance assistance agents).

Figure 2: ONDC will drive three e-commerce trends

(Sattva 2022)

Figure 3: Opportunities at the three levels of the e-commerce ecosystem

END SELLERS
(Retailers, Artisans, Kirana Stores, Nano-Businesses

ENABLERS OF CORE PROCESSES
(Logistics, Warehousing, Delivery)

FACILITATORS
(Cataloguing, Payments Reconciliation, Social Commerce Agents)
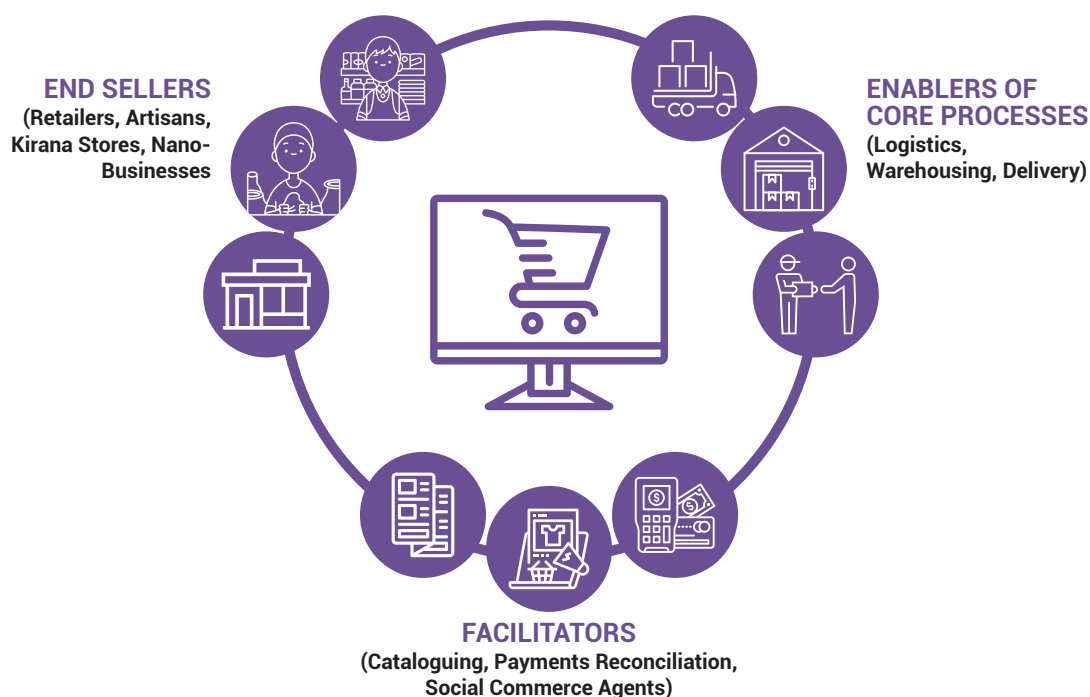
(Sattva 2022)

Accelerating e-commerce penetration in non-metro regions

Despite the post-COVID-19 push to digital commerce in India, over 95% of the country's populace residing in Tier-II+ cities and rural areas continues to shop and transact offline. Rural India constitutes 32% of the total online shoppers and commands barely 10% of the total online retail spending (Jain et al. 2022). In contrast, Tier-I cities constitute over 38% of the e-commerce order volume (Unicommerce 2022). The reasons for the low adoption include sparse population density, modest disposable incomes, relatively lower mobile and internet penetration, lack of trust regarding online transactions among consumers, and low maturity of supply chains. Nevertheless, optimistic scenarios predict that over 24% of online spending will come from rural areas by 2030 (Jain et al. 2022), and cities such as Ludhiana, Kozhikode and Thrissur, with increasing e-commerce penetration, will drive the next wave of growth (Jain & Kumar 2021). These predictions could materialise at a faster pace with ONDC, which aims to reach every pin code in the country over the next few years. Given the size of the market in Tier-II cities and rural areas, a huge opportunity awaits for entrepreneurs to tap into these geographies (UN DESA 2018; Ministry of Defence 2017).

With e-commerce reaching the hinterland at a faster pace, we foresee a surge in entrepreneurial opportunities for sellers and value chain intermediaries.

• **End sellers:** As consumers in rural areas and smaller towns are poised to drive e-commerce growth, the ONDC will unlock an additional sales channel for sellers such as local brands,

Figure 4: E-commerce has a massive opportunity to expand outside Tier-I cities

47 MILLION Population of Tier-I Cities

453 MILLION Population Outside Tier-I Cities & Villages

900 MILLION Population in Villages

(Sattva 2022)

artisans, farmers, self-help groups and cooperatives in these regions. The unbundling and interoperability functionalities will allow low-cost discoverability and improve seller autonomy through cross-platform listing and selling. This is expected to reduce entry barriers for smaller sellers, providing them with better linkages and access to the online market. The lower entry barriers will allow new businesses to flourish via the e-retail channel and aid the revival of sunset industries, such as lesser-known handicrafts.

• **Enablers:** Due to the unbundling feature of the ONDC's architecture, specialised value chain intermediaries will emerge to address the pain points of sellers in the smaller towns and cities. For example, to solve the problem of last-mile delivery, local store owners can offer secured lockers or act as pick-up-drop-off centres and demand aggregation points, thereby generating additional revenue. Since the average order size in small towns is modest (less than $4), home delivery makes unit economics unviable in these areas, necessitating demand aggregation to optimise logistics costs. CityMall, which is operational in India's small towns like Sonipat, Jhajjar and Rohtak, achieves group buying and demand aggregation by tapping into the entrepreneurial spirit of local community leaders who also act as supply chain partners for last-mile delivery logistics. CityMall's model claims to have democratised business creation opportunities for nearly 25,000 community leaders while delivering an attractive value proposition in the form of affordability and convenience to consumers (Ascent n.d.). E-commerce contributed to 27% of the warehousing demand in India in 2021 (ASSOCHAM 2022). Rapid spread of e-commerce will increase the demand for space and storage in smaller towns, to propel the pace of order fulfilment. The lower real estate costs in smaller cities will support the surge in warehousing services. Cheaper labour in smaller towns is also expected to contribute to gig employment in logistics and last-mile delivery.

• **Facilitators:** Over 75% Indians have no English proficiency (Shariff and Alam 2021). Most Indians prefer to access internet content, especially entertainment content, in their local language (Google 2020). However, English continues to be the dominant language for shopping websites in India (although major e-commerce portals now offer vernacular interfaces), limiting the access of non-English readers to digital tools. Innovations in voice and vernacular technologies will play an important role in bridging the language gaps for consumers and sellers from the interior regions. For example, the adoption of UPI by busy kirana store owners led Paytm to launch the Soundbox, a device that delivers an instant audio payment confirmation (in the language of choice), eliminating the need to check the phone after each transaction made by a customer. The ONDC's unbundled architecture could enable plug-ins of similar voice-enabled and language support solutions, driving innovation and specialisation in these areas. The network has already started exploring options in this direction (Munthra 2022). Social media penetration outside metro areas is on the rise, with 79% of active internet users in rural India using social media (Kantar 2021). This gives a massive opportunity for social commerce business models to be built, wherein traders use social media platforms such as Facebook and Instagram to market or sell products. This is especially relevant in smaller towns and villages where community networks and word-of-mouth play an important role. For example, KitaBeli in Indonesia uses neighbourhood agents called *mitras* (friends) in Tier-II and Tier-III cities who use their social media profiles to assist first-time buyers with online transactions and overcome their trust issues. CityMall employs a similar model via WhatsApp messenger, whereby community leaders provide handholding support to initiate beginners into digital commerce. CityMall's initiative has enabled micro-entrepreneurs to set up virtual stores on WhatsApp and sell products to their close networks, resulting in a snowball effect.

Figure 5: Entrepreneurs can address the e-commerce pain points in non-metro regions

	Current pain point	Potential entrepreneurship opportunity
Expensive last-mile logistics	• Rural areas have an average population density of less than 300 people (Census 2011), which is almost 10 times lower than the average density of urban regions. • The sparse population combined with smaller average size value of $4 makes last-mile home delivery costly.	• Local stores owners can offer secured lockers or act as pick-up-drop-off (PUDO) centres and manage last-mile logistics at a low cost by employing locals. • Local community members can facilitate group buying and demand aggregation to increase average order size.
Unmet need for modern warehouses	• Eight top cities account for 329 million square feet of warehousing space even as 19,000 PIN codes in small towns and rural areas constitute nearly 40% of the total e-commerce shipments (GLG 2021). • As metro cities deal with space constraints due to high population density, warehousing demand in Tier-II cities is set to increase.	• To meet the expectations of faster deliveries and returns, there is significant scope for modern, automated warehouse hubs to come up in smaller cities to supplement the distribution centres in metro cities and bring down logistics costs. • As e-commerce strengthens agricultural supply chains, demand for temperature-controlled warehouses will increase.
Low levels of English usage	• Over 75% Indians have no English proficiency. • Use of local languages for internet use is common in Tier-II+ areas but English remains the dominant language for many e-commerce interfaces.	• Innovators can build voice-enabled and language support solutions. • These solutions can be plugged in with the interoperability and unbundling features of the ONDC architecture.
Lack of trust and familiarity	• The ONDC envisions 900 million buyers to shop on the network by 2027. Many of them will be first-time e-shoppers who would need assistance to navigate the user interface and e-commerce vocabulary. • Word-of-mouth publicity and community networks continue to influence purchase decisions in smaller towns.	• Given that 79% of rural internet users are active on social media, social commerce models can leverage these platforms to engage consumers and provide handholding support with the help of neighbourhood agents. • Community members can become micro-entrepreneurs by selling/reselling products to their local network, bridging the trust deficit.

(Sattva 2022)

Growth in hyperlocal, quick commerce and neighbourhood commerce

The ONDC's technological architecture includes a search gateway which intends to enable widespread and equitable participation of local sellers in the e-commerce ecosystem. The location-aware search feature will empower local retailers to access and fulfil online demand and encourage trade of locally manufactured goods, thus supporting the growth of micro, small and medium enterprises (MSMEs). The ONDC's search functionality is in contrast to the current system adopted by e-commerce marketplaces, which highlights products based on brand names, ratings and discounts, implicitly giving greater visibility to marquee labels.

- **End sellers**: The hyperlocal delivery market in India was valued at $6.3 million in 2021 and is projected to grow at 30.4% annually between 2022 and 2032 (Future Market Insights 2022). Neighbourhood grocery outlets, home-based foodpreneurs (sellers offering bakery items, tiffin services, indigenous snacks and condiments) and utility service providers (including electricians, plumbers, masons, and carpenters) will gain low-cost online visibility and traction through ONDC's location-aware search feature, encouraging nano-entrepreneurship. Similarly, the additional online sales channel will allow local sellers of products such as white goods and furniture to reach a wider customer base. Reduced entry barriers and a democratic, inclusive e-commerce paradigm will encourage first-generation entrepreneurs to become job creators rather than job seekers.

- **Enablers:** Several opportunities will emerge for local logistics providers to facilitate quick commerce and hyperlocal deliveries. Dark stores, which are local micro-warehouses that stock products only for online order fulfilment will mushroom, to optimise last-mile delivery costs and facilitate ultra-fast deliveries. These stores are a viable fulfilment strategy as they shave off 10-30% off shipping costs (AWL India 2022). They also result in efficient real estate utilisation. This model has been used by Zepto, a hyperlocal delivery start-up in major Indian cities.

Hyperlocal and quick-commerce growth can also contribute to a reliable and steady source of local employment for delivery agents. Gojek, a SouthEast Asian start-up has cashed in on the hyperlocal opportunity through innovations in last-mile delivery. Feng Chen, a senior leader at Gojek, observed Bangkok's residential density and saw an opportunity to employ runners instead of drivers to deliver food over short distances. This allowed her to expand the delivery agent base and offer jobs to people who do not have a personal vehicle to deliver the food orders. In recent times, India's hyperlocal brands, Swiggy and Blinkit have begun offering parcel delivery and doorstep printout services respectively. The unbundling capability of the ONDC will enable local sellers to locate and engage personnel for packaging and delivery, generating employment and boosting the local gig economy. Given that quick commerce start-up Dunzo had 18,000 active delivery partners in 2019, while food delivery start-ups such as Zomato and Swiggy together employed more than 300,000 delivery executives in 2021 (Raman, Ramachandran & Sasikumar 2021), a boost to hyperlocal commerce can contribute immensely to job growth, especially for semi-skilled and unskilled workers.

- **Facilitators:** Hyperlocal e-aggregators could operate on a marketplace model to streamline and facilitate links between local buyers and sellers, creating submarkets or niches based on geography and category. The registry network service on the ONDC will aid the search and discovery of such local businesses and facilitate partnerships that result in the emergence of these submarkets. For example, aggregators could onboard local street vendors or compile local events and experiences to boost local tourism.
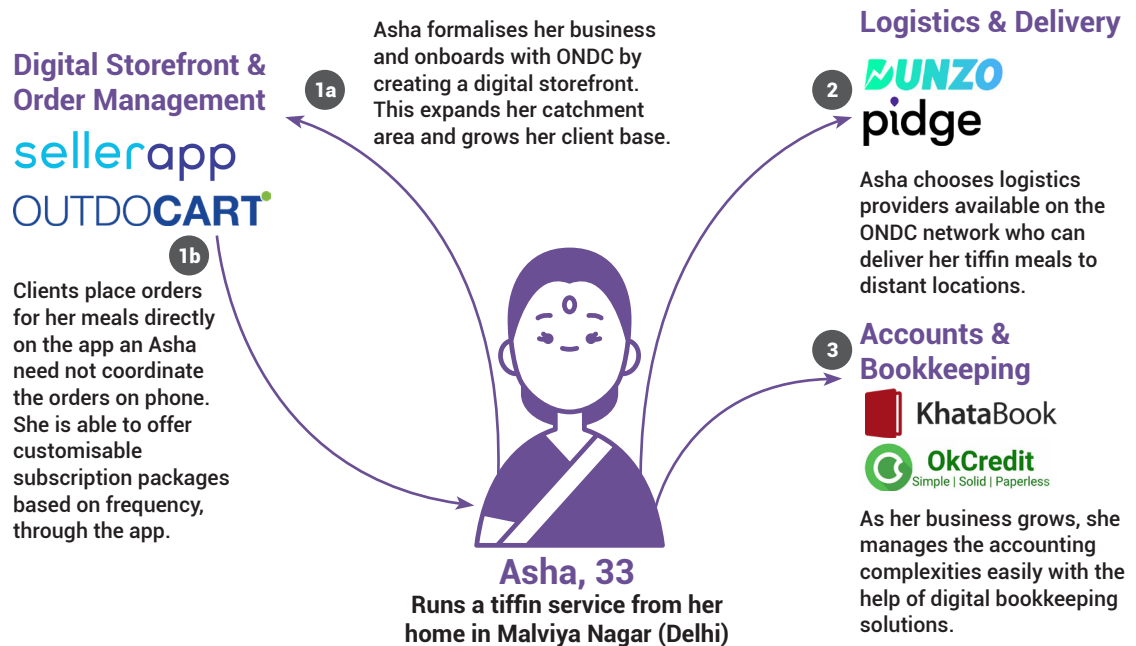
The ONDC's policy on data governance—which is in the drafting stage as of the date of publication of this document—can potentially reform the e-commerce space by democratising data access to spur competition and innovation. This offers scope for the emergence of business analytics providers who will allow entrepreneurs to identify new markets and customer segments through data-driven insights, inducing a compounded effect on entrepreneurial growth. The network's open architecture involves a gateway through which all search requests are routed and broadcast to seller apps. This trove of data can be mined by analytics firms for market intelligence and predictive analytics, which can inform innovators and entrepreneurs about unique opportunities. This contrasts with the currently closed design of e-commerce platforms that restrict data access, and have been accused of misusing proprietary information for business malpractice and antitrust activities.

> **Use case for hyperlocal businesses: Wider access to local service providers and opportunity to expand consumer base**
>
> Consider Asha, a 33-year-old solo business owner who operates a tiffin centre from her home in a small locality in Delhi. She provides home-cooked meals to the working professionals in her nearby area. Her neighbour's son, Amit handles the procurement of ingredients, and the home deliveries of tiffins. Due to word-of-mouth publicity, Asha gets requests to offer her meals in some other localities as well, but she is unable to cater to distant locations, as Amit only has a bicycle and cannot travel long distances. By registering on the ONDC, Asha can discover and engage local delivery providers who can provide pick-up and drop-off services of her tiffin meals. This would allow her small business to expand its reach.
>
> Observing the popularity and demand for home-cooked meals in the area, a local entrepreneur, Sanjay, can seize the opportunity to create a submarket for multi-cuisine tiffin services. By scanning the ONDC's registry, Sanjay can identify tiffin service providers and partner with them to streamline the meal ordering, procurement and delivery processes.
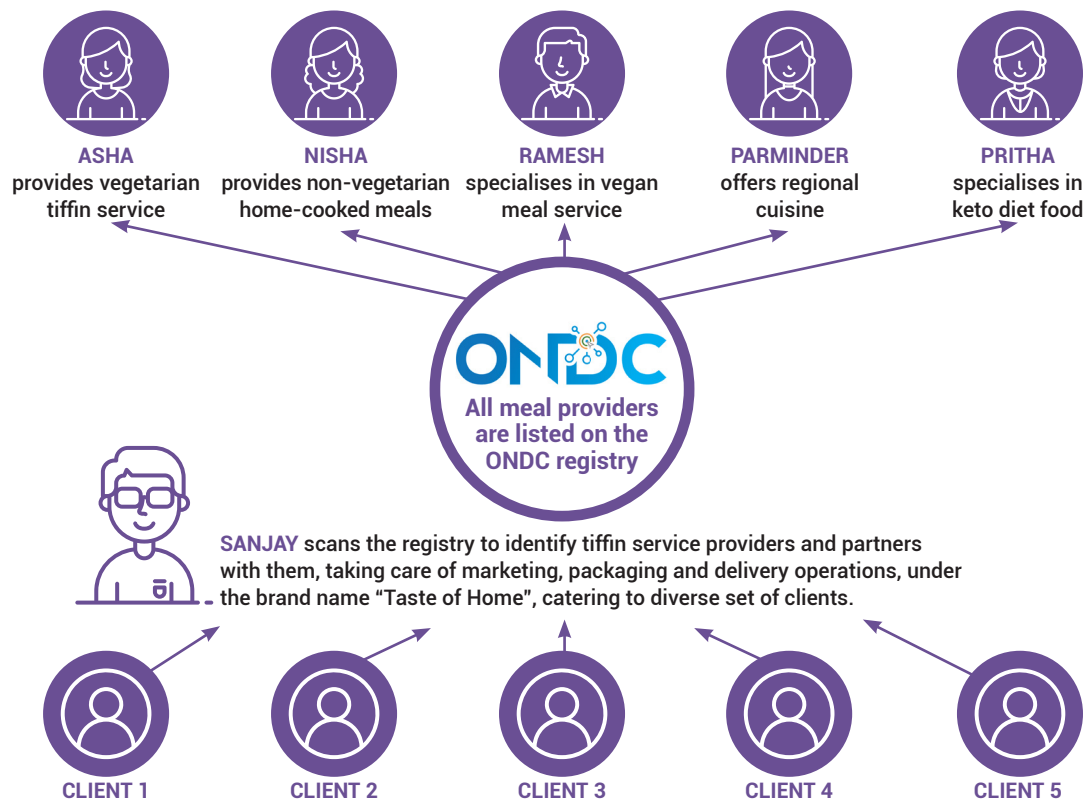
Figure 6a: Use case for a hyperlocal business availing value chain services on the network

Digital Storefront & Order Management

sellerapp

OUTDO**CART**

Asha formalises her business and onboards with ONDC by creating a digital storefront. This expands her catchment area and grows her client base.

1b

Clients place orders for her meals directly on the app an Asha need not coordinate the orders on phone. She is able to offer customisable subscription packages based on frequency, through the app.

Logistics & Delivery

DUNZO

pidge

Asha chooses logistics providers available on the ONDC network who can deliver her tiffin meals to distant locations.

Accounts & Bookkeeping

KhataBook

OkCredit
Simple | Solid | Paperless

As her business grows, she manages the accounting complexities easily with the help of digital bookkeeping solutions.

Asha, 33
Runs a tiffin service from her home in Malviya Nagar (Delhi)

(Sattva 2022)

Note: Logos and brand names have been used for illustration purpose only.

Figure 6b: Use case for hyperlocal aggregator for the submarket of home-cooked meals

ASHA
provides vegetarian tiffin service

NISHA
provides non-vegetarian home-cooked meals

RAMESH
specialises in vegan meal service

PARMINDER
offers regional cuisine

PRITHA
specialises in keto diet food

ONDC
All meal providers are listed on the ONDC registry

SANJAY scans the registry to identify tiffin service providers and partners with them, taking care of marketing, packaging and delivery operations, under the brand name "Taste of Home", catering to diverse set of clients.

CLIENT 1 **CLIENT 2** **CLIENT 3** **CLIENT 4** **CLIENT 5**

(Sattva 2022)

Formalising and digitalising of businesses

The online shopper base in India is expected to rise to over 50 crore by 2030 (World Economic Forum 2019). There is an opportunity for new sets of players, who do not have a digital presence currently, to meet this growing demand. The ONDC targets to host 120,000 sellers on the network within five years of its launch (ONDC Strategy Paper 2022), ushering many new participants to benefit from the ongoing digital commerce revolution.

Just as the UPI initiated a digital financial trail for erstwhile informal businesses such as kirana stores and streetside vendors, the ONDC is expected to kick off the formalisation and digitisation journeys of small businesses. The digital initiative intends to democratise participation in e-commerce for all businesses irrespective of size or digital quotient, and formalise business activity by creating an active digital history which would enable easier access to finance options.

- **End sellers:** Only about 0.5% of the 12 million kirana stores in India have a digital presence, and a bulk of the 43 million MSMEs are yet to enter the digital commerce landscape (ONDC Strategy Paper 2022). Such sellers have the potential to tap into wider markets and flourish through online commerce. However, the prevalent siloed platform approach to e-commerce has limited the participation of these actors, by raising several barriers to entry. The ONDC aims to ease these barriers by making digital commerce small-business-friendly and promoting a diverse, inclusive ecosystem. A simplified onboarding process, improved seller autonomy, low-cost discoverability and avenues for organic reach will empower new participants who have so far been intimidated by the current form of the e-commerce landscape.

- **Enablers:** Direct selling through online channels involves several ancillary activities, such as invoicing, shipping, marketing and logistics. Managing these components independently is intimidating for small home-based enterprises who are just entering the e-commerce ecosystem and have weak market linkages. E-commerce marketplaces which dominate the current landscape offer integrated services at an additional cost. This integrated offering restricts entry of new and specialised service providers, who face capital constraints in establishing integrated solutions.

The ONDC unbundles the e-commerce value chain by delinking allied services from the platform, and the interoperable architecture allows cohesive integration of unbundled activities. The various microservices, including logistics, warehousing and last-mile delivery, can be separately operated by different actors to put together a complete transaction. This opens up innovation and specialisation opportunities by encouraging the advent of entrepreneurs. The wide variety of service providers enhances competition and price discovery thus delivering value to the end sellers, who can discover the intermediaries through the network gateway and registry. Thus, sellers can focus on immediate operational concerns, rather than managing ancillary activities. Moreover, sellers can choose the best combination of registered service providers at competitive prices, rather than being compelled to use the ancillary services provided by an aggregator platform.

This facilitates a virtuous cycle of entrepreneurship and innovation, as intermediaries and sellers enrich the ecosystem through their symbiotic relationship.

• **Facilitators:** The need for digitalisation of first-time sellers would create the space for facilitators, who support the former's digital journeys by providing services for cataloguing, inventory management, digital marketing and integration with ONDC. Piecemeal innovation in this space has been set in motion in the past by kirana-tech start-ups (OkShop, Dukaan), agri-tech facilitators (GraamHaat, AgroStar) and sector-agnostic innovators (OutDoCart, MiniDukaan, SellerApp), among others. Since the ONDC will release open-source reference applications for seller-side interfaces which can be used by any service provider to adopt and build on, it will facilitate the entry of several new intermediaries who can make an impact at population scale. These crucial DukaanTech providers will offer the necessary onboarding support and ancillary services such as taxation support and registration compliance guidance associated with formalisation of business activity.

Figure 7: Digitalisation facilitators in India

(Sattva 2022)

Note: Logos and brand names have been used for illustration purpose only. Indicative and non-exhaustive list.

Another potential business opportunity lies in the cash remittance space. Despite the spread of e-commerce, many buyers still prefer the cash mode of payment, with credit/debit cards, net banking, and e-wallets contributing to less than 30% of online purchases (JM Financial 2022a). The expected growth in e-commerce could increase the possibility of cash-on-delivery (CoD) orders, until all consumers become comfortable with digital payments. Despite the extra cost of a cash transaction, sellers can earn the buyers' trust and also serve a wider customer base by offering the convenience of CoD. Hence this opens up a massive opportunity for innovation in the retail cash management sector, which is expected to grow at 20% CAGR between 2021 and 2027 (JM Financial 2022b). For example, ShipRocket guarantees a 2-day remittance with its 'Early CoD' offering, to improve seller cash flows. CoD payments reconciliation is also a niche industry with players such as ClickPost offering automated reconciliation and cash remittance management under one umbrella.

Figure 8: Logistics-cum-fintech innovators can facilitate regular cash flow for small sellers by offering prompt cash-on-delivery settlement
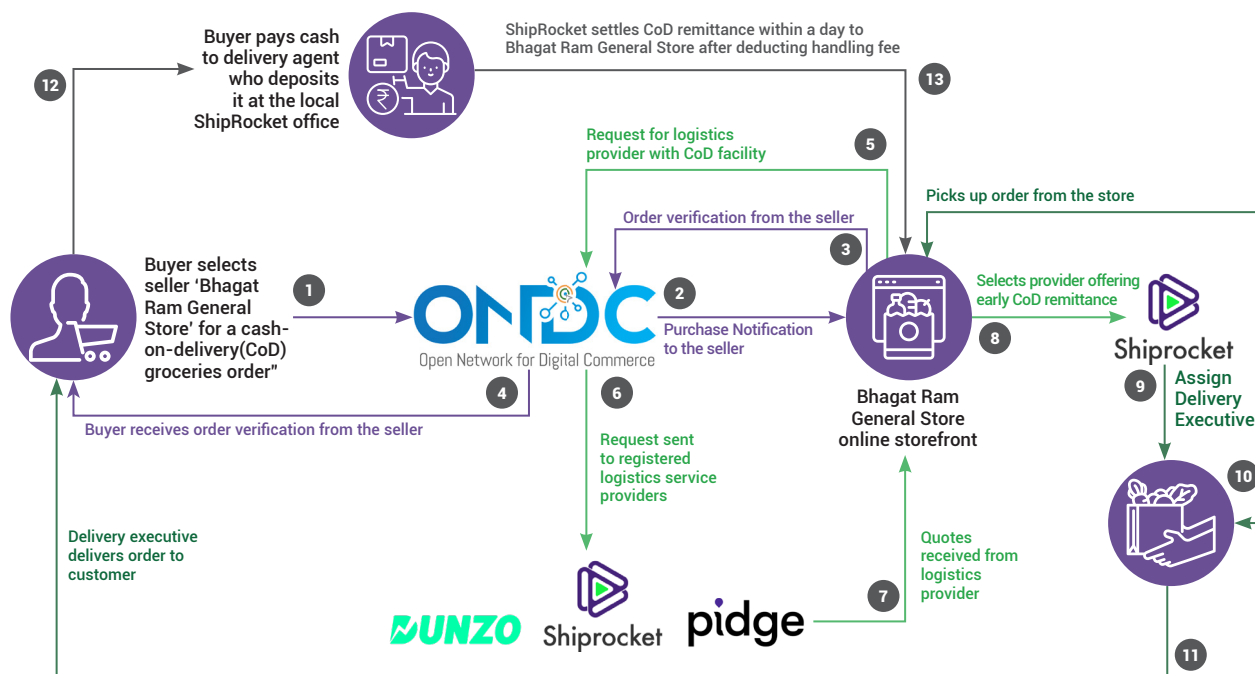
Flow 1: Buying and Notification   Flow 2: Selection of logistic player   Flow 3: Delivery of the product   Flow 4: Cash remittance settlement

(Sattva 2022)   Note: Logos and brand names have been used for illustration purpose only.

Figure 9: E-commerce trends induced by the ONDC will open up opportunities for entrepreneurs

	Trend	Seller	Core Processes/Enablers	Support Processes/Facilitators
	Higher e-commerce penetration in Tier-II cities and rural areas	• Artisans • Self-help groups • Cooperatives • Local stores and brands • Farmers	• Pick-up/drop off points (PUDO) for last-mile logistics • Business correspondents/community leaders as supply chain partners • Warehousing in smaller cities	• Voice and vernacular language support technologies • Social commerce models for assisted buying and selling
	Growth in hyperlocal, quick commerce and neighbourhood commerce	• Neighbourhood grocery outlets • Home-based food entrepreneurs (bakeries and tiffin services) • Utility service providers (plumbing, cleaning, masonry etc.)	• Dark stores (hyperlocal micro-fulfilment centres) • Hyperlocal aggregators for last-mile delivery services	• Submarkets/niche markets based on location and category (e.g. local street food) • Business analytics to support sellers with market intelligence and explore new opportunities
	Formalising and digitising of businesses	• Medium, small and micro enterprises • Nano-entrepreneurs	• Digital bookkeeping and accounts management to support small businesses with tax compliance and payments reconciliation • Fast cash-on-delivery settlement to enable uninterrupted cash flow for small sellers	• Digital cataloguing, inventory management, digital marketing for digitalisation and integration with ONDC

(Sattva Insights)

Potential Risks on the Network can Stall the Growth of Entrepreneurship

ONDC presents a massive opportunity for entrepreneurs but the sheer magnitude and complexity of the initiative can pose certain risks, inhibiting adoption by the intended network participants. Addressing these operational and strategic challenges will be a non-negotiable to deliver a seamless experience to the intended beneficiaries. We highlight key risk areas which may threaten the growth of entrepreneurial activity.

- **Customer protection:** While marketplaces adopting the ONDC have adequate resources to manage customer service and accountability, individual sellers on the ONDC would be required to make hefty initial investments for the same. Given that consumers have become used to the convenience and customer-first values of the extant e-commerce platforms, protection of consumer interests and delivering value will be key for active participation on the network.

- **Slow grievance redressal:** With the separation of a buyer app and seller app on ONDC, resolution of complaints would require customers to jump through multiple hoops which can result in delays and a less-than-perfect customer experience. A customer would need to register a complaint through the buyer app, which will communicate it to the seller app and relay it to the seller. This can result in delayed processing of return requests and refunds.

- **Untrustworthy sellers:** Nearly 20% of products sold on e-commerce platforms are counterfeit (Local Circles 2018). This is a bigger problem in small towns and cities with lower levels of consumer awareness.

  E-commerce giants claim to de-list sellers proven to be selling fake products. However, on a decentralised network with unclear accountability norms, seller apps may have low incentive to vet the sellers by undertaking rigorous document verification during onboarding and ensuring that genuine items are being sold. As a result, unscrupulous sellers might harm the business of genuine merchants on the network, in addition to hurting consumer interests.

- **Unfriendly user interface:** Existing e-commerce marketplaces offer a convenient, aesthetically designed, user-friendly interface across shopping websites and mobile apps. Nearly 73% of consumers say that customer experience is a deciding factor when making purchase decisions (Paytm 2022). Delivering an exceptional online shopping experience that the users enjoy and find useful is important to drive better conversions and engagement, along with reducing cart abandonment risks.

  With several providers of buyer apps on the decentralised network, it might be difficult to ensure a user-friendly interface. A buyer app with bugs or unintuitive search and checkout features can hamper the buyer experience and traction on the network.

- **Seller protection:** The decentralised architecture of the network can result in challenges for new and small sellers venturing into e-commerce. In 2021, nearly 3.6% of e-commerce orders in the Asia Pacific region were found to be fraudulent in 2021 (Statista 2022). While returns or replacements are inevitable in e-commerce, a common buyer malpractice is refund or returns abuse, wherein a customer uses the returns policy of a merchant so much that it becomes unprofitable for the seller. Customers may abuse refunds by faking returns, returning forgeries, or reselling merchandise. This form of malpractice accounted for 27% of the online shopping frauds experienced by e-merchants in 2021, across the world (Proctor, 2020). Such activities by customers can hurt the bottomline of small merchants, preventing them from exploring the online channel as a viable option.

- **Digital skills and awareness:** The true benefits of ONDC will be realised when a plurality of buyers and sellers, irrespective of size and location actively participate and transact on the network.

- **Awareness:** Widespread adoption by buyers and sellers will not be achieved without awareness about the ONDC's value proposition and a clear understanding of its architecture. Buyers locked into an existing e-commerce platform (not registered on ONDC) due to loyalty membership programmes or other rewards may be hesitant to switch to another buyer app which is active on the network: such consumers will need to be incentivised to try out the ONDC.

- **Language support and voice-enabled interface:** Almost 60% of the rural population is not active on the internet due to low digital literacy and language barriers (Modi 2022). An easy-to-use intuitive interface with language and voice support, along with a systematic awareness campaign will attract first-time buyers and sellers to transact on the network.

- **Network policies:** With several moving parts and massive expected traffic, the network's reliability will be crucial to foster trust and sustain engagement.

- **Minimising outage on the network:** An e-portal's performance and slow loading are important reasons behind cart abandonment. Nearly 20% of e-shoppers report not completing the checkout process due to errors and crashes on the website (Baymard Institute 2017). Network disruptions can lead to massive losses for sellers as illustrated by Brazil's experience in October 2021. A 6-hour blackout on Facebook, Instagram, and WhatsApp services resulted in a revenue loss of nearly 6.6 million Brazilian reals (equivalent to about $1.2 million), which represented around two percent of the average daily e-commerce revenue generated in the Brazilian market (Statista 2021). Although the ONDC indemnifies itself against network outages and does not guarantee 'uptime', minimising disruption on the network will be crucial for the ONDC to gain acceptance among buyers and sellers.

- **Data privacy:** E-commerce portals are easy targets for cybercriminals given the vast amount of personal and financial consumer data these host. Many businesses are not

equipped to protect their customers' data and breaches can result in the user's loss of trust in the business. Almost 19% surveyed customers abandoned their shopping carts during the checkout process as they did not trust the portal with their credit card details (Baymard Institute 2017). Data security is a serious concern for sellers too. Nearly 30% of retailers reported losses of critical business data, and 42% experienced brand degradation after a cyberattack (Fortinet 2021). With several network participants expected to onboard with ONDC, instituting a clear governance policy on data privacy to protect sensitive user details will be an important objective, especially as the network grows.

Figure 10: Potential risks on the ONDC, and their impact on participation

Risk Area	Potential Problem	Description	Effect on Buyer Adoption	Effect on Seller Adoption
Customer Protection	Slow Grievance Redressal	Customers would need to register a complaint through the buyer app, who will communicate it to the seller app and relay it to the seller. Multiple hoops to jump through can result in delays and a less-than-perfect customer experience.	●●●	●
	Unfriendly User Experience	The buyer app interface may not be user-friendly or convenient to use with some bugs and unintuitive search features.	●●	●
	Fake or Untrustworthy Sellers	Unscrupulous sellers might sell fake products on the network. Seller apps will have low incentive to undertake rigorous seller KYC during onboarding and ensuring that genuine items are being sold.	●●●	●
Seller Protection	Buyer Malpractice	Customers could indulge in buyer malpractice, for example, return fraud or frivolous return or replacement requests.	●	●●
Digital Skills and Awareness	Lack of Digital Skills	Buyer or seller may not transact through ONDC due to lack of digital skills.	●●	●●
	Lack of Awareness	Sellers may not register on ONDC due to a lack of knowledge or awareness of its benefits. Buyer may not use the buyer app registered on the network, due to being locked into an existing platform, not on ONDC.	●●●	●●
Network Policies	Network Performance and Maintenance	There could be failed or incomplete transactions due to network downtime (since uptime is not guaranteed by ONDC).	●●	●●●
	Inadequate Data Privacy	There might be unauthorised use of buyer/seller data for marketing or targeted advertisement. There is a possibility of data theft or cyber fraud.	●●●	●●●

Impact ● Low ●● Medium ●●● High

(Sattva Insights)

Risk Mitigation Requires Collaborative Efforts between the Government, Funders and Not-for-Profit Sectors

Initiatives by the not-for-profit sector, including donor agencies and civil society organisations, can be instrumental in mitigating some of the risks and facilitating successful deployment and maintenance of the network. Encouraging widespread adoption of the ONDC and enabling a robust monitoring and governance framework are crucial areas where the not-for-profit sector can contribute immensely, in collaboration with the government and technocrats.

Facilitating last-mile adoption

A multi-pronged approach can help ONDC gain traction among various target groups spread across geographies and sectors, and achieve the goal of inclusive e-commerce. Prioritising social inclusion to meet the needs of deprived individuals should be an important area for funding.

- **Rural areas and remote regions:** The e-commerce experience is suboptimal for rural users due to low internet speeds and insufficient bandwidth. It can be enhanced for them by creating apps which consume low data and work well on slower 2G/3G networks. Patient capital can support innovators to build, deploy and scale up these solutions.

- **Regional language users:** Multilingual support and voice-enabled solutions can break the language barriers and bridge the digital divide, to make e-commerce more accessible and inclusive for users in small towns or cities. Philanthropists can fund social entrepreneurs developing these innovations and facilitate easier access to the target market.

- **First-generation entrepreneurs and MSMEs:** Good quality photography for online catalogues and inventory management are crucial for successful selling via the online channel. However, these activities can be overwhelming and expensive for first-generation entrepreneurs venturing into e-commerce. Donors can support initiatives that help such solopreneurs and nano-entrepreneurs in creating digital product portfolios at a low cost. Providing direct capital for initial technological setup, such as accounting software can also help small sellers to integrate successfully with the ONDC and reduce the friction involved in onboarding.

- **New digital technology users:** Funders can support large-scale digital literacy programmes for buyers and sellers at the bottom of the pyramid who are being introduced to digital technologies – and by extension, e-commerce – for the first time. New users would need handholding support and knowledge about data protection and safe online behaviour as well. Donor agencies can collaborate with training institutes and not-for-profit organisations for providing financial and digital literacy skills at scale.

Monitoring and evaluation

Funders and civil society organisations need to join hands with the government, technologists, policymakers and network participants to ensure adequate monitoring and governance and prevent malpractice on the network. Funding agencies have a larger responsibility to encourage good behaviour by technology and government partners, and this can be accomplished by arriving at a shared understanding of the challenges and a vision for resolving them.

• **Data privacy and protection:** Philanthropists can play an important role in providing technical and financial support to the government in building privacy frameworks and safeguards for the ONDC. One way this can be done is by facilitating partnerships and collaboration between relevant stakeholders. Sustainable funding of academic research via grants can promote knowledge sharing, and allow government staff to build critical expertise. Donors can also earmark money for cybersecurity and the ongoing maintenance of the network, to ease the burden on the government coffers.

• **Impact evaluation:** Funders can support monitoring and evaluation efforts to assess the impact of ONDC on hitherto undigitised buyers and sellers. This would help identify risks and opportunities around the public good's deployment and impact on the bottom-of-the-pyramid participants, paving the way for timely course correction, and strengthening the last-mile welfare effects of the network.

Conclusion

In absence of accurate data, one can only hypothesise the true livelihoods potential of the start-ups encouraged by ONDC. There is a need for a formal mapping of the potential innovations that can be precipitated by the opening up of the e-commerce ecosystem. Research and evaluation of the ONDC's capabilities, and a documentation of untapped business opportunities will incentivise and encourage entrepreneurs to address the existing gaps through innovation and experimentation. The ONDC is expected to lower the 'go-to-market' efforts for entrepreneurs, which will increase their risk-taking capacity and support their business aspirations.

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