Supply Chain Integration and Logistics-Based Entrepreneurial Ventures in Rivers State

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Abstract
Rivers State is located in the center of the trade route of the east of Nigeria. It is home to the Onne Port Complex in the Onne Oil and Gas Free Zone, an international airport in Port Harcourt (Rivers), the Eleme petrochemical and refining complex and road connections to South-East, North-Central and Northern Nigeria. Onne alone accounted for approximately 22.7 per cent of the country's cargo throughput in the first half of 2026. However, a large proportion of the value added in these value chains doesn't reach local entrepreneurs (women and young people in host communities). This paper considers the possibility of logistics based entrepreneurial enterprises through the prism of supply chain integration in Rivers State. Based on Resource Based View and Supply Chain Integration framework, it elucidates the way small and medium enterprises (SMEs) can integrate themselves into the internal, supplier and customer interfaces in port, oil and gas, agro-produce and e-commerce supply chains. It classifies and outlines the different types of business venture that are possible: last-mile and rural deliveries, freight forwarding and customs, haulage and fleet services, warehousing and cold-chain, waterway transport, reverse logistics and recycling, and digital logistics platforms. The paper also mentions recurring challenges like poor access to Onne via roads, insecurity on water routes and highways, multiple levies, high diesel prices, lack of financial resources, and lack of available skilled personnel in logistics. It concludes that deliberate integration (cooperatives, Nigerian Content linkages, digital tools, entrepreneurship and community education) can help to make Rivers State's logistics infrastructure a vehicle for inclusive enterprise. Interviews and personal accounts by some business owners were helpful in this research.

Keywords: *supply chain integration, logistics entrepreneurship, SMEs, last-mile delivery, Onne Port, Rivers State*

1. Introduction

In all economies, movement is the basis of the economy. Raw materials need to be brought into factories. Product needs to be sold. Before food spoils it needs to get to the table. The businesses that arrange for these types of movements are the logistics businesses and this includes those

that move the goods, track them, store them, clear the goods for transport, and track them to the ultimate destinations. This sector is not peripheral in a trading State such as Rivers. It's the economy's arteries and veins. This paper is NOT a paper written from the outside. Since 1999 I have been trying to raise birds and logistics got me down more times than I can count over the last ten years. Without money, in 2004 I was not always able to purchase vaccines in time and lost approximately 100 of my 200 birds. I also resold eggs from other farms, and didn't have a driver, so deliveries were done by me. In 2006, I got an opportunity to go down to Onne to visit Pellegrini, a catering company there. The President Olusegun Obasanjo was on a visit to Rivers State and hence the road was blocked. Upon its reopening, all motorists sprang into action at the same time. I was in my car and driving it carelessly when it was hit in the back by another driver, and I lost almost 20 crates of eggs, which is half of my supply. No cold storage, and I could not keep dressed chickens; by 2008 I sold off some of the chickens that I still had just to keep away from them. If it had been a freezer and a generator, it would have been a different story. In 2010, I began a sachet water business, but due to transportation challenges and unethical workers in the distribution chain, this was too. It was never my demand; it was always my supply. Each time it was the gremlins in my chain. The experiments are the reason for this paper's question on how to involve SMEs in the supply chains of their surroundings rather than accepting all the risks. Rivers State has a unique assortment of logistics assets. The first port in Nigeria to implement the landlord port to attract private investment was the Onne Port Complex on the Bonny River estuary along Ogu Creek (Nigerian Ports Authority [NPA], n.d.). It can accommodate general cargo, dry and wet bulk, containers and oil well equipment, and is a hub for oil and gas logistics. Onne's share of Nigeria's overall cargo in the first half of 2026 was 22.7 per cent, primarily driven by LNG exports (The Gazette, 2026). All that's missing is the Port Harcourt Port, the Port Harcourt International Airport, the Eleme refinery and petrochemical complex, the East–West Road and the Eastern rail corridor.

According to the Small and Medium Enterprise Development Agency of Nigeria (SMEDAN) and the National Bureau of Statistics (NBS) out of the total MSMEs population in the country which is over 39 million, Rivers State recorded 6.8 per cent.

But there is a disturbing space in between. The value of flow through these assets is captured by large international operators, oil companies and terminal concessionaires. Local business owners, particularly the women, youths, and people of host communities like Eleme, Ogu/Bolo, Oyigbo, Okrika and the riverine .8 Local Government Areas are frequently marginalized and excluded from the chain, as goods pass them by. It's not that it's not being used. It is lack of integration. This paper proposes that integration of the supply chain could provide a more practical approach for local entrepreneurs to develop sustainable logistics-based businesses. It provides answers to four questions:

What is the meaning of supply chain integration and logistics-based entrepreneurship in Rivers State?

2. What are the entry points for small businesses in the State for supply chains?
3. What kinds of logistics businesses can local businessmen establish?
4. What barriers are there to these businesses, and how can they overcome them?

2. Conceptual Clarification

2.1 Supply Chain and Supply Chain Management

Supply chain management is identified as the systematic coordination of the business functions within a firm and between firms in the chain to enhance the long-term performance of each firm and the chain as a whole by Mentzer et al. (2001). The true competition in today's world is not between companies, but between supply chains, Christopher (2016) continues.

I'll state that for this paper: All products have a journey. It starts as raw materials, moves through hands, machines, and vehicles to a customer. Supply chain management is the

organising of that journey. It connects individuals, activities, information, and resources to ensure a seamless transfer from one to the other. If the links connect, the costs will diminish; there will be no waste, no scarcity, and products will be delivered on time. Once the links are severed, a lot of people along the chain suffer, as they often are on roads leading to Onne.

2.2 Supply Chain Integration

Supply chain integration (SCI) refers to how well a firm integrates and manages its processes with SC partners and how well it collaborates within and across organisations (Flynn et al., 2010). It is three-dimensional:

Internal integration: departments within one business sharing information and functioning as one unit.

Supplier integration: close, long-term cooperation with suppliers of inputs.

Customer integration: close cooperation with the customers of the outputs, involving the exchange of forecasts and delivery timelines.

Integration is the integration of three flows: the physical flow of goods, the information flow (orders, tracking, documents), and the financial flow (payments, credit). A small enterprise is integrated into a larger chain when it is sure to be linked to all three flows.

2.3 Logistics

Logistics is defined as a component of supply chain management that is involved in the planning, implementation, and control of the movement (and storage) of goods, services and information from the origin to consumption (Christopher, 2016). It covers inbound logistics (inputs to a firm), outbound logistics (products to customers), last-mile delivery (the final leg to the customer's door), reverse logistics (returns, recovery and recycling) and third-party logistics (outsourced logistics services).

2.4 Logistics-Based Entrepreneurial Venture

An entrepreneurial logistics business is defined in this paper as a business which generates value in the movement, storage, tracking, clearing and/or coordination of goods for other parties. These could be anything from an individual dispatch rider to a cold room operator, a truck broker, a boat transport cooperative or a software platform. They all share the trait of being able to make money through the movement of goods in a different company's value chain. The majority of these services are delivered by adults looking to make a living for their families; they learn and develop these skills on the job, rather than in the classroom. This underscores the important role adult learning and continuous education play in citizens' lives.

3. Theoretical Framework

3.1 Resource-Based View

According to the Resource Based View (RBV), companies can achieve a sustainable competitive advantage by exploiting resources that are valued, rare, hard to imitate and non-substitutable (Barney, 1991). A small Rivers State entrepreneur doesn't have to invest a lot of capital to have such resources. Local knowledge of creeks and routes, relationships with communities, language skills, close to ports and markets, safe operation in challenging terrain, etc., are all valuable and hard to duplicate. Why local entrepreneurs can do battle with larger companies for specific niches – particularly in last-mile, riverine, and host-community logistics – is explained by RBV.

3.2 Theory of Supply Chain Integration

From an integration perspective, closer ties with suppliers and customers result in better cost, speed, reliability and flexibility (Flynn et al., 2010). The findings of this study corroborate this

view. In the context of bottled water manufacturers in the state, Horsfall and Ikegwuru (2021) also observed that external integration significantly enhances the performance of sustainable supply chain. Small companies also gain from integration in that there is less market risk; a company that has a contract with a large chain is more likely to have a steady flow of business than one that is dependent on walk-in customers.

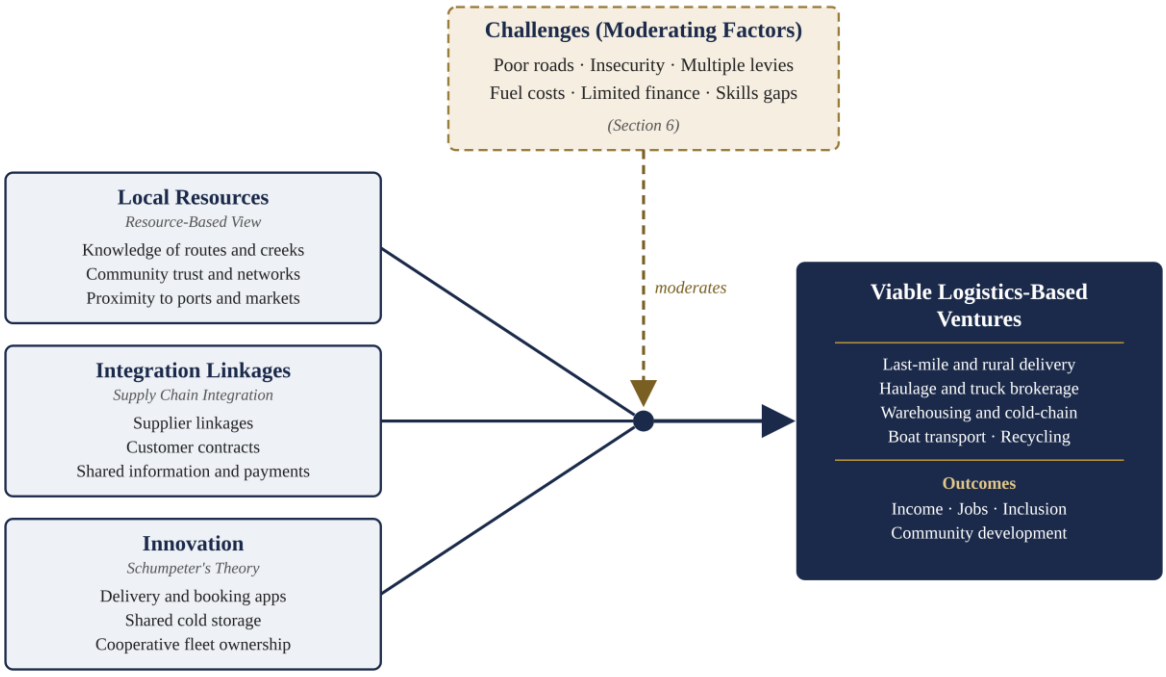
3.4 New and Old Growth Industries

Schumpeter (1934) refers to the entrepreneur as an innovator who provides new combinations (new products, new methods, new markets or new organisation forms). These are logistic combinations such as delivery apps, route optimisation, mobile payments, shared cold storage and cooperative fleet ownership. This theory is about how the young business owners can get into the business field without investing much in it through digital innovation.

When integrated, these theories make a straightforward suggestion: for local entrepreneurs with unique resources (RBV), small-scale enterprises with deliberate connections to large firms (SCI), and new approaches (innovation) can create sustainable logistics enterprises.

Figure 1

Conceptual Model of Supply Chain Integration and Logistics-Based Entrepreneurial Ventures in Rivers State



Note. Author's conceptualisation (2026), drawing on the Resource-Based View, Supply Chain Integration theory and Schumpeter's theory of innovation.

The relationship between the three theories is illustrated in Figure 1 in this paper. The small entrepreneur brings or builds local resources, integration linkages and innovation. Viable logistics-based ventures are possible where the three converge and the ventures generate income, jobs, inclusion and community development. The difficulties outlined in Section 6 exist on a higher level than the model, to moderate it. They are not enzymes that stop the process but they weaken or strengthen it. The link is reinforced by good roads, security and availability of finance. It is weak due to bad roads, several levies and insecurity.

4. The Logistics Landscape of Rivers State

4.1 Ports and the Free Zone

The Onne Port Complex has several terminals, one of which is the Federal Ocean Terminal and the other is the Federal Lighter Terminal, in one of the biggest Oil and Gas Free Zones in the world (NPA, n.d.). There is a close network of freight forwarders, customs brokers, haulage companies, warehouse operators and marine service companies around the port. General cargo capacity is provided by the older Port Harcourt Port and jetties. The demand for trucking, documentation, security, catering, maintenance and storage is a steady one, that is centered on the port.

4.2 Oil, Gas, Petrochemical and Fertiliser Chains

Onne and Bonny are home to refining, petrochemical, fertiliser and LNG operations while Eleme is a hub for these activities. These sectors rely on the uninterrupted supply of machinery and chemicals, spare parts, food, and labour transport and waste disposal. According to the Nigerian Oil and Gas Industry Content Development Act (2010), Nigeria's operators are expected to prioritise Nigerian goods, services and firms. This opens up a formal framework for local suppliers and logistics service providers that fulfill the standards.

4.3 Agro-Produce and Food Chains

Port Harcourt's major markets — Mile 1, Mile 3, Oil Mill and Creek Road, Bori camp mammy market — receive yams, garri, plantain, tomatoes, onions, grains and livestock from the South-East, Benue, Plateau and the North. Fish, crayfish, periwinkle and other seafood flow from riverine LGAs such as Andoni, Opobo/Nkoro, Bonny, Degema and Akuku-Toru. Post-harvest losses are high where storage, cooling and timely transport are absent. From Benue, haulage handlers load and move from Otukpo Roundabout to various locations. Middlemen gather the goods or farm produce by going to farms to buy from farmers. Sometimes indigenes place orders via WhatsApp, and small transporters move the goods from Benue to Port Harcourt.

4.4 E-Commerce and Urban Distribution

Port Harcourt is one of Nigeria's leading e-commerce markets after Lagos and Abuja. Local delivery firms now partner with national platforms to reach both city and rural customers across the state. Small online sellers — many of them women — depend on dispatch riders and parcel services every day.

4.5 Waterways and Rail

Much of Rivers State is riverine. Boats are the main link between Port Harcourt and communities in Bonny, Kalabari, Okrika and Andoni. On land, the rehabilitated Port Harcourt–Aba section of the Eastern narrow-gauge railway has resumed services, but the full Port Harcourt–Maiduguri corridor is still under reconstruction. When completed, it is expected to connect the Onne, Bonny and Port Harcourt ports to the hinterland, opening new opportunities in rail-linked trucking, inland depots and freight consolidation. With the completion of the Bodo-Bonny road, moving goods has become easier and safer. The travel time from Port Harcourt to Bonny, which used to be 3 hours, is now shorter.

5. Entrepreneurial Opportunities through Supply Chain Integration

The landscape above creates many entry points for small and medium ventures. The key is to identify a recurring movement problem inside an existing chain and to integrate with the firms that face it.

5.1 Last-Mile and Rural Delivery

Final-leg delivery is critical for e-commerce sites, pharmacies, and restaurants, as well as small online sellers. Motorcycles, tricycles or vans can be used in small-scale businesses operated by entrepreneurs for short-haul operations in rural and peri-urban areas, which are otherwise expensive for larger companies. Integration is achieved via service contracts with platforms and merchants, and shared tracking/payment systems.

Timstar Freight and Logistics Services Limited sees itself as a business based in Port Harcourt, founded in May 2025, that provides services in the areas of freight forwarding, customs clearance, road haulage and cargo transportation to corporate customers, importers and exporters (Timstar Freight and Logistics Services Limited, n.d.). Its company profile is an example of documentation and physical movement as part of an entrepreneurial entry point to a service offering in a port. The profile doesn't state the company's primary challenge, so no interview statement or claim about the company's biggest challenge is associated with the company. The analytical lesson here is that a logistics entrepreneur could have a business based on connected customer needs as opposed to just one transport transaction. A public company profile, however, is not about the profitability of the venture, service quality or the ability to win contracts. Aguocha et al. (2025) from the University of Port Harcourt showed that there was a relationship between supplier and customer integration and shipping performance measures such as timely delivery and cost efficiency. This can be used as a research foundation to analyze a possible service linkage, but should not be considered as evidence of the performance of the company**.**

5.2 Freight Forwarding Support and Customs Documentation

Documentation assistance, terminal processes and shipment tracking is needed for Onne and Port Harcourt importers and exporters. Trained graduates can make good use of their skills in licensed customs agents and their supporting industries such as document processing, shipment monitoring, co-ordinating cargo inspection etc.

5.3 Haulage, Truck Brokerage and Fleet Services

The ports are made up of goods movement by road. The business opportunities include ownership of trucks, load brokering between the owners of the cargo and the independent truckers or truck maintenance, tyre, fuel and driver-welfare services along the Onne-Port Harcourt-Aba route.

5.4 Warehousing and Cold-Chain Storage

Bonded warehouses, small cold storage units located close to the markets and solar powered cold storage rooms for fish, meat, vegetables and pharmaceuticals resolve port congestion and post-harvest loss. Cold-chain businesses play a significant role in the riverine fish business in particular.

5.5 Water Transport and Boat Logistics

Passenger and cargo boats link island and creek communities to Port Harcourt markets and oil and gas sites. Organised, safety-compliant boat services — operated individually or as cooperatives — can contract with traders, schools, health facilities and energy companies.

5.6 Reverse Logistics, Waste Recovery and Recycling

Plastics, scrap metal, used oil, cartons, and pallets are thrown into the trash every day in households, markets and industries. Collection, sorting and resale businesses convert this trash into raw material for recyclers and manufacturers. The study revealed that reverse logistics was one of the important enablers identified by shipping companies in Port Harcourt as having a

strong influence on their performance, highlighting the importance of the whole chain. In many dump sites in Port Harcourt and in other parts of Nigeria, waste is being collected and delivered to the manufacturers as raw material. The need for adequate waste management or reverse logistics was emphasized by A study led by Sarah Ogah-Aduwari mni on women and domestic waste management, which highlighted the revenue generation in proper waste management. This waste recycling business can be initiated with a minimum investment of 10, 000 naira.

5.7 Packaging, Procurement and Supply Agency

For many small producers, there is a lack of packaging and labelling, and a lack of bulk-buying power. The entrepreneur can be a procurement agent to oil and gas contractors, a packaging & labelling service provider to food processors who supply to supermarkets, and a school/hospital procurement agent.

5.8 Digital Logistics Platforms

The young entrepreneurs can create or run apps for delivery booking, truck matching, route planning, ticketing for boats and warehouse inventory. These are platforms that bring the information flow of multiple small operators together into a single network.

5.9 Summary of Venture Types

Table 1: Logistics-based venture types in Rivers State

Venture type	Main supply chain served	Integration type	Start-up capital
Last-mile and rural delivery	E-commerce, retail, pharmacy	Customer	Low
Freight forwarding support and documentation	Port import/export	Customer and supplier	Low to medium
Haulage and truck brokerage	Port, manufacturing, agro	Customer	Medium to high
Warehousing and cold-chain	Agro-produce, fish, pharmaceuticals	Supplier and customer	Medium to high
Water transport and boat logistics	Riverine trade, oil and gas	Customer	Medium
Reverse logistics and recycling	Households, markets, industry	Supplier (to recyclers)	Low to medium
Packaging and procurement agency	Food processing, oil and gas, institutions	Supplier	Low
Digital logistics platforms	All chains	Information	Low to medium

Source: Author's compilation (2026).

The table reveals that there are a number of ventures that need very little in the way of capital. Success is not a matter of finances, it is about reliability, trust, and linkages with bigger firms.

6. Challenges Facing Logistics-Based Ventures

1. **Reliability of infrastructure and access:** It was reported that a critical section of Road D in Onne Port has been completed, and that the previous state of the road posed traffic and congestion hazards, as well as the risk of truck accidents (Chukwu, 2025). This requires the ability to separate improvements within the port area from the condition of the surrounding access corridor. Unreliable access can affect the number of trips per day and can risk the operator incurring waiting costs for a small haulage company. For this reason, realistic collection windows, communication with terminals, and contingency routing must also be considered for integration, in addition to road maintenance.

2 **Security and service coverage**: According to Okunsanya and Azmat (2025), insecurity is identified as one of the Nigerian logistics constraints. Route assessment, safe operating hours, and incident reporting should then be part of agreements with customers for Rivers ventures. The national evidence does not set out to demonstrate the frequency of incidents in specific Rivers roads or waterways, but rather to ensure security is considered.

3. Regulatory uncertainty and charges: Freight forwarders have protested against a 7 per cent import surcharge at Onne, citing multiple taxation as a concern, BusinessDay (2026) reported. This should be separated from a confirmed register of statutory charges. The entrepreneurial concern is the predictability of the total transaction costs – unanticipated costs can make small orders less profitable and make a quotation difficult. There should be clear fee schedules and explicit allocations of fees between the service provider and the customer.

4. **Fuel and operating costs**: The price monitoring of diesel done by National Bureau of Statistics (2025) offers dated evidence for assessing energy costs and Okunsanya and Azmat (2025) cite high petroleum costs and financial instability as broader constraints. It is therefore advisable for a delivery or cold-storage business to look at the cost per trip or cost per storage cycle and then agree on how the price will change. Otherwise, contracts can create activity without adequate cash flow to support it.

5. Funding and cash-flow needs: Also, financial instability is mentioned in the analysis of Okunsanya and Azmat (2025). In the real world, the small contractor will have to pay employees and purchase fuel before getting paid from customers. It is suggested that equipment finance is not enough, that the terms of payment should be suitable, and that the credit should be reasonable and working capital should be planned in tandem with the equipment.

6. **Coordinating skills and digitalization**: Okunsanya and Azmat (2025) identify inadequate logistics technology and human resources as constraints. Training should be linked with booking, documentation, and payment records, and work performed during the day. Similarly, Isoghom and Daminabo (2024) and Nzeneri (2008) suggest employee training in greener transport in Rivers State, highlighting the importance of hands-on training for drivers and operators.

7. **Access to dependable business linkages**: The integration challenge is about the possibility of occasional transactions becoming ongoing cooperation for a small operator. The relationships between integration and shipping performance are reported by Aguocha et al. (2025), and the association between transportation and warehousing outsourcing and the performance of the food and beverage firms in Rivers is reported by Ifekanandu (2026). The research suggests a need for supplier development and for more transparent service contracts, but not that every small entrant will receive a contract. Large buyers should ensure that

qualification requirements are clear and that they give feedback on the accuracy of delivery, the documentation, and safety.

8. **Disruption and continuity of the environment**: According to the Annual Flood Outlook released by the Federal Ministry of Information and National Orientation (2025), Rivers is among the states with high flood-risk areas. This is not an indication that all routes will be affected, but rather an estimate of exposure. Vulnerable stores and collection points should be identified, stock and documents safeguarded, and alternative delivery arrangements made. In addition, Isoghom and Daminabo (2024) connect green transportation to sustainable supply chain performance in Rivers State, urging a focus on environmental management as well as continuity planning. Local research further suggests that integration is not a defined success, but a set of practices. Nennaaton & Obienu (2025) reported in the journal of the Rivers State University that strategic supplier partnership, reverse logistics and supply chains performance are all positively associated in food and beverage companies. Combined with the logistics and shipping studies above, this implies that enterprise support needs to improve information sharing, supplier collaboration, and recycling arrangements. These relationships are largely correlational and leave open the direction and magnitude of causal effects.

7. Conclusion and Recommendations

7.1 Conclusion

The state of Rivers has not been deficient in logistics infrastructure. It is non-inclusive integrated. The need for movement, storage and coordination in ports, free zones, refineries and markets and waterways is great. Local entrepreneurs have unique resources knowledge of the land, trust from the community and proximity that larger businesses can't easily replicate. These resources, when put on purpose to existing supply chains and innovatively supported, can be a strong driver for enterprise and job creation and community development. Success with integration, rather than infrastructure, will determine who will reap the rewards of the state's gateway status.

7.2 Recommendations

The government (federal, state and local) should repair and maintain the Port Harcourt–Onne road and other important market roads, accelerate the Eastern rail corridor and its port connections, implement a harmonised and transparent logistics levy regime, and create logistics parks and SME clusters close to Onne, Eleme and the main markets.

2. Port, free-zone and oil and gas operators: Improve Nigerian Content and host-community supplier development programmes; ensure that defined categories of logistics operations are given to qualified local SMEs; and pay small contractors promptly.

3. Financial institution and development agencies: Conduct asset finance and lease of trucks, boats, motorcycles and solar cold rooms; and frame group lending to logistics cooperatives; and engage in product development of logistics insurance for small-sized logistics firms.

Educational institutions: Embed supply chain and logistics components in entrepreneurship, adult and non-formal education and community development programmes; collaborate with industry to provide hands-on training on documentation, safety, fleet management and digital tools.

5. Community leaders, women groups and youth groups: Develop logistics cooperatives for access to resources, procurement, packaging and cold chain; encourage women's involvement in delivery, procurement, packaging and cold chain activities; collaborate with security agencies for route and waterway protection.

Entrepreneurs: Be aware of your niche; register; establish reliability and trust before scaling; use easy-to-use digital tools for booking, monitoring and payment; and invest in your staff's training and safety.

7.3 Implications for Adult and Community Education

It is clear that continuous learning and upskilling is essential to have an active entrepreneurial population that will not rely on paid work for their livelihood, but will seek to explore new opportunities to be self-employed and also employ labour. This kind of enterprises can also offer mentoring and skills development facilities to the region's youth. It is very effective adult education that can be done in the meeting programme of women groups by inviting seminars and workshops to educate the members about the new trend and opportunities.

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