Rapid Reconnaissance of the Value Chains for Tomato and Green Leafy Vegetables in Nigeria

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Key Messages

- In mid-2022, RSM2SNF conducted a rapid reconnaissance of the value chains for tomatoes and green leafy vegetables (GLVs) in the states of Ebonyi, Kaduna, and Oyo.
- In total, 138 semi-structured interviews were conducted with key informants from nano, micro, and small enterprises across all value chain nodes.
- Challenges related to transportation costs and inefficiencies are most common in all states, reflecting the far-reaching impact of poor road networks and high vehicle and fuel costs.
- Food safety concerns are noted at the transportation stage, where tomatoes are often stored in baskets with little ventilation, and at the wholesale and retail stage, where the produce is often packaged and arranged without following safe food handling and proper storage practices.
- The lack of proper storage containers also brings high rates of spoilage, a cost that is borne by transporters, wholesalers, retailers, and consumers. Spoilage further occurs at the wholesaler and retailer nodes due to a lack of storage space.

Introduction

Nationwide, tomato production in Nigeria increased by 36% from 2016 to 2021 (FAO, 2021), and as of 2019, the annual value of green vegetables consumed was 1.23 billion naira, while the value for tomatoes was 5.25 billion naira (GHS, 2019). As agrifood value chains continue to grow, the role of micro, small, and medium enterprises (MSMEs) operating within these value chains is becoming increasingly evident. Such enterprises include farmers/producers, input suppliers, third-party logistics providers, wholesalers, processors, and retailers. Each of these nodes along the value chain are vital in ensuring a steady supply of affordable food for consumers (Figure 2).

Nevertheless, MSMEs have received limited attention in research. Thus, the RSM2SNF project aims to conduct research on MSMEs in the value chains for nutritionally dense foods, such as tomatoes and green leafy vegetables (GLVs). In mid-2022, a rapid reconnaissance of the tomato and GLV value chains was performed in the states of Ebonyi, Kaduna, and Oyo (Figure 1). Key informants (often the business owners or operational managers of MSMEs) were interviewed in a semi-structured manner. In total, 138 interviews were conducted, mostly with nano-scale (45%) and micro-scale enterprises (44%).[1] The interviewees included wholesalers (27%), producers (22%), retailers (20%), input suppliers (14%), and processors (6%).[2]

Figure 1: Ebonyi, Kaduna, and Oyo States

[1] According to the Nigerian National SME policy, nano enterprises have 1-2 employees, micro enterprises have 3-9 employees, small enterprises have 10-49 employees, and medium enterprises have 50-199.

[2] Some enterprises operate at multiple nodes of the value chain and were interviewed about their activities at each node.

Experiences of MSMEs

Producers

Tomato producers in Ebonyi and Oyo tend to be recent entrants to the subsector, while most producers in Kaduna have been involved in production for longer. This seems to reflect efforts to increase local production even in states with less favorable agroecological conditions for tomato production (such as Ebonyi and Oyo). Surprisingly, some tomato farmers in Ebonyi sell their crops out-of-state through contractual agreements with supermarkets or on e-store platforms. These practices have widened the gap between demand and supply within the state, where supply is already insufficient.

Producers in Kaduna are more likely than those in Ebonyi and Oyo to apply irrigation for both GLV and tomato production. As irrigation requires equipment, which must be borrowed or rented when farmers cannot afford their own, its accessibility can vary.

In all three states, smaller enterprises are unable to produce year-round, unlike larger tomato and vegetable farms. This distinction is primarily attributed to the high costs of combatting inclement weather and lack of access to technology that makes production less labor intensive. High input costs, pests and disease, and issues related to labor were additional challenges commonly faced by vegetable producers.

Input Suppliers

Input suppliers sell seeds, fertilizer, agrochemicals, tools, and various farming equipment to tomato and GLV producers. In all states, input suppliers have benefitted from a rise in fertilizer and agrochemical use, to the point that few or no suppliers that exclusively sold seeds were found.

In both Ebonyi and Oyo, most input suppliers are micro-scale enterprises that experience seasonal changes in demand and profits. In contrast, input suppliers in Kaduna are of relatively larger scale.

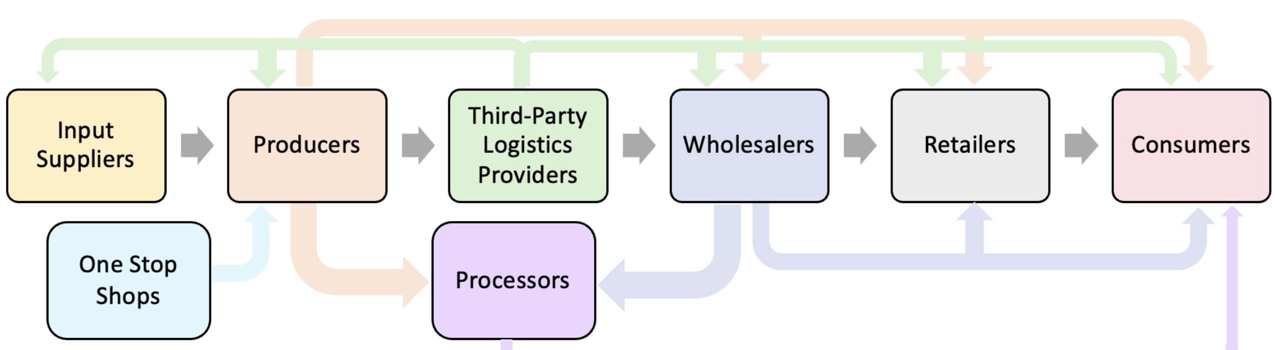
Sales representatives from input manufacturing and distribution companies were found to have a significant presence in Ebonyi. While in Oyo, there is a prevalence of input suppliers who are trained in agricultural practices. Some suppliers also raise seedlings and provide consultancy services, and many have longstanding relations with the companies from which they purchase goods, creating an intricate network of local and external suppliers. Although input suppliers also have an important role in Kaduna, their network is less elaborate.

In each state, input suppliers are concentrated in specific locations, typically local markets where other vendors are present. A widespread challenge among input suppliers is the high costs of inputs. Other challenges are state-specific, with suppliers in Kaduna and Oyo both facing issues related to transportation.

Wholesalers (Traders)

Within the value chains, wholesalers play an important role as they link producers to retailers and consumers. In Ebonyi, most GLV wholesalers are small- and micro-scale and most tomato wholesalers are nano-scale. GLV wholesalers in Ebonyi sell their goods at major markets within the state, either by aggregating supply from various farms and then transporting these goods to a major market, or by purchasing bulk supplies at the market and selling shares of that supply to retailers. In recent years, these GLV wholesalers and retailers have formed unions that work to manage the GLV supply chain. This development is unique to Ebonyi.

Figure 2: Value Chain Actors and Linkages



Sales at wholesale markets are seasonal in Ebonyi, with lower prices during seasons of higher supply. Tomato wholesalers in all states frequently lend money to producers or pre-pay for their goods. This type of partnership provides capital to producers for inputs and can also ensure that wholesalers receive a steady supply of their desired products. Wholesalers in Oyo noted that procurement from producers takes place about three times a month and requires hiring a driver and laborers to offload the truck.

In Ebonyi, most wholesalers of both tomatoes and GLVs are also producers. This dual role is also seen in Oyo with respect to GLVs but is not recorded for tomatoes in either Oyo or Kaduna.

Challenges faced by wholesalers are often state-specific. Wholesalers in Ebonyi and Oyo face issues of seasonality, which potentially stems from the lower production capacity in these states compared to Kaduna. Issues of poor storage facilities and poor road networks were noted in Oyo and Kaduna. Wholesalers broadly noted difficulties with transportation (transport delays, vehicle maintenance/breakdown, poor road network, traffic, transport costs), market prices (low market prices, price fluctuations, market competition from wholesalers), and infrastructure (security, lack of access to storage facilities and equipment, lack of shelter for vendors).

Processors

Tomato processing in Oyo and Kaduna includes the production of tomato paste, puree, juice, wine, powder, and dried tomato slices. Overall, it seems that processing tomatoes results in little profit. Additionally, demand for fresh tomatoes is generally higher than that of processed products. No processors were located in Ebonyi.

Third-Party Logistics Providers

The role of third-party logistic providers is primarily that of transporting goods from producers to wholesalers or markets. In Ebonyi, this role can also include the loading and off-loading of goods, as well as providing credit services to wholesalers.

In all three states, the high cost of vehicle maintenance is a major challenge. This issue is compounded by poor road networks, and vehicle breakdown was noted as a contributing factor in produce spoilage. Other common challenges are extortion by highway officials and high fuel prices. Overall, the challenges faced within this node revolve around transportation costs and the need for a speedy delivery of the highly perishable vegetables.

Retailers

Vegetable retailers often operate at local markets, which can include standing structures, street markets, or other sites of public gathering. Retailers in Ebonyi and Oyo are known to have close relationships with wholesalers, often maintaining business loyalty to a particular wholesaler unless that wholesaler has run out of supply. This level of interaction between retailers and wholesalers is not present in the state of Kaduna. In Oyo state, most GLV retailers purchased their supply directly from farmers, a practice not seen in Ebonyi and Kaduna.

A key responsibility of retailers is the packaging and arranging of vegetables. The methods used can heavily influence the quality and longevity of the produce. However, due to constraints on storage and affordable packing, many retailers are not able to extend the shelf life of tomatoes and GLVs. Along with the highly perishable nature of these vegetables, this leaves retailers to purchase small quantities of the goods, making it necessary to replenish their supply every few days.

A lack of proper storage space and competition with wholesalers are the most common challenges faced by retailers. Issues associated with a lack of storage include spoilage, pests, and disease/contamination. Additionally, wholesalers are often able to sell produce at lower prices, thereby undercutting retailers. In Oyo, it was estimated that approximately 40% of consumers buy their vegetables from wholesalers.

One-Stop-Shops

A one-stop shop is a distinctive type of retailer that offers a wide variety of agricultural goods and services, ranging from seeds to agricultural tools to veterinary care, trainings, and consultancy. Their purpose is to streamline a farmer's access to inputs. The primary challenges faced by one-stop-shops are complex transport logistics (intensified by import regulations), pests, and meeting the demand for seeds during the rainy season.

Geographic Patterns

In aggregate, the high costs of transportation and lack of critical infrastructure made up about 35% and 13%, respectively, of the challenges noted in Kaduna. These challenges were mainly experienced by wholesalers and third-party logistics providers, and this focus on infrastructure in Kaduna is more intense than what is seen in Ebonyi and Oyo.

Value chain actors in Ebonyi seem to engage in extensive trade with Plateau, Benue, Enugu, and Cross River. This has generated a steady supply of the produce in Ebonyi to and from external producers and traders. However, this has also introduced more competition into the vegetable value chain, especially for producers who cannot compete with the prices of outside markets. This may ultimately drive the vegetable value chain in Ebonyi to become dependent on external supply.

Cross-Cutting Themes

Environment

The effects of climate change are present in all study states as changes in temperature and rainfall disrupt both the production and sale of vegetables. For producers, these unpredictable weather patterns make it difficult to decide when to plant and how best to protect crops once they are planted. Additionally, low or heavy rainfall can have a detrimental impact on irrigation systems. The repercussions are further felt elsewhere in the value chain, as interruptions in supply mean lower incomes for third-party logistics providers, processors, wholesalers, and retailers.

Food Safety

Throughout the vegetable value chains, concerns around food safety stem from the handling and packaging of post-harvest produce. Potential for contamination often starts at the transportation stage, where vegetables (specifically tomatoes) are commonly stored in baskets with little ventilation. This creates an environment ideal for bacterial growth and spread.

Once the produce is delivered to wholesalers and retailers, it is generally packaged and arranged without following safe food handling and proper storage practices. For example, many GLV retailers sell bunches of GLVs by laying them directly on the ground or on a tarp, then use an unclean knife to cut the bunches for customers. Likewise, tomato retailers often leave tomatoes uncovered in market stalls overnight, leaving them exposed to rodents and flies. Such practices reflect substandard infrastructure in markets, a lack of access to storage facilities, high costs of plastic containers, and a need for better education on how to prevent food contamination.

While these issues are prevalent in the transporting, wholesale, and retailing nodes of the value chain, tomato processors have been able to implement several methods of decontamination. This includes extensive washing and boiling, use of preservatives such as salt, and pasteurization. However, the equipment needed for this level of decontamination is expensive and requires regular maintenance. Additionally, for the processing of dried tomato slices, processors typically use unclean rocks or paved roads to sun-dry the tomatoes. Thus, unsafe food practices as a result of financial constraints are present at every node of the value chain.

Gender

The roles of men and women along the vegetable value chain tend to be divided. Across the study states, men are generally responsible for the majority of producing and transporting vegetables, while women are more prominent in the marketing, wholesaling, and retailing roles. Women dominate the wholesale industry in Ebonyi, and most vegetable retailers in Oyo are women. This contrasts with Kaduna, where women are seemingly less engaged in the value chain, although women in Kaduna have recently begun participating in the washing and packaging of tomatoes. Overall, women are very involved in the value chains, though there is room for more equitable opportunities for both men and women at each node.

Next Steps

Findings from this rapid reconnaissance will be incorporated into an RSM2SNF survey of wholesale markets in mid-2023, and a subsequent micro-level survey of MSMEs along the value chains for tomatoes and GLVs.

References

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