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## Organizational structures, gender roles and upgrading strategies for smallholders in developing countries' local value chains

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## **RTG 1666 GlobalFood**

Transformation of Global Agri-Food Systems:  
Trends, Driving Forces, and Implications for Developing Countries

**University of Goettingen**

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# Organizational Structures, Gender Roles and Upgrading Strategies for Smallholders in Developing Countries' Local Value Chains

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## **Abstract**

To achieve the Sustainable Development Goals, research concepts and empirical evidence are needed to upgrade developing countries' smallholder activities within local value chains (LVCs). The study aims to uncover LVCs' (1) organization, (2) governance themes and gender roles for value addition and (3) smallholder upgrading strategies in developing countries' dualistic sectors. The global value chain (GVC) framework is extended towards a gendered value web approach that captures the importance of hidden gender roles and power relations. Empirical data obtained from 3 focus group discussions and 21 interviews in the Nigerian shrimp and prawn sector represent the basis for qualitative analysis. The results indicate that, despite being driven by competitive traders, mutually reliant coordination between production and processing segments and strategic business activities of female processors are crucial for the LVCs' functioning. Based on these results, manifold managerial and policy implications which can also apply to other developing countries and cases are derived to upgrade and develop smallholder activities and products along the Nigerian shrimp and prawn LVC.

# 1. Introduction

The last decade has witnessed huge transformations in the food value chains of developing countries, such as rapidly increasing globalization, modernization and technologization. These transformations are often associated with distributional effects counteracting the achievement of the Sustainable Development Goals (Dürr, 2018; WTO, 2019). Smallholders respond to changing situations by switching their marketing channels or inter-organizational relationships (Lie et al., 2012; Schipmann & Qaim, 2010; Teklehaimanot et al., 2017). This intensifies the formation of dualistic systems in which modern value chains (MVCs) and local value chains (LVCs)<sup>1</sup> coexist. Typically, MVCs are characterized by tighter governance structures. Contrarily, rampant spot market sourcing driven by specialized and competitive procurement agents in a “hub and spoke model” (Herring, 2015) and, in some cases, differentiated gender relations and roles (FAO, 2016) characterize LVCs. Since the mid-1990s, the focus of development analysts and researchers in many developing countries has been on the expansion of food exports, the inclusion of smallholders in contract and standard-ridden MVCs and increasing their welfare through such participation (Maertens, 2012; Neven et al., 2009; Reardon et al., 2006; Schipmann & Qaim, 2010). Even though LVCs represent a significant source of income for the rural population and ensure effective food delivery that meets the culturally diverse needs of urban and rural consumers in a developing country, recently, agribusinesses’ and development analysts’ attention has been placed on LVCs (Dürr, 2018; Lie et al., 2012). This attention aims to promote alternative development models and smallholder opportunities in developing countries (Ketema et al., 2016; Lie et al., 2012; Maertens & Swinnen, 2012).

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<sup>1</sup> Series of value-adding activities that are mostly carried out by several informally coordinated actors, the products of which are meant for consumers within the same geographical location or region.

Despite this trend, the existing scientific literature still shows threefold gaps that can potentially limit our understanding of LVCs' functioning in developing countries and the corresponding implications for further development. First, most studies on LVCs' organizational structures have focussed on non-dualistic sectors, while studies that have not have distinguished LVCs from MVCs (Chagomoka et al., 2013; Lie et al., 2012). This has created a gap in the knowledge regarding how typical LVCs are organized and function in parallel to MVCs. Second, the existing literature has shown mixed findings regarding the fundamental drivers of LVCs. Most studies that have relied on LVC governance analysis to identify the key drivers have failed to capture the evolution and multiplicity of governance structures (Ketema et al., 2016; Lie et al., 2012). This has resulted in the identification and analysis of incomplete LVC governance typologies and consequently limited the implications for LVC development. Clearly, many LVCs are driven by multiple and interacting governance structures (Gereffi & Fernandez-Stark, 2016). Third, studies that have sought to determine LVCs' drivers have neglected hidden factors, like gender relations and roles and decision-making power, which are socially constructed (Lie et al., 2012). Indeed, there is a scarcity of conceptual approaches that integrate gender analyses into the concept of value chains (Schumacher, 2014).

The objective of this study is to uncover LVCs' (1) organization, (2) governance themes and gender roles for value addition and (3) smallholder upgrading strategies in developing countries' dualistic sectors. Using qualitative data obtained from the Nigerian shrimp and prawn subsector, this study seeks to achieve the sub-objectives in three ways. First, building on the research by Lie et al. (2012) and Maertens and Swinnen (2012), we rely on the global value chain (GVC) approach (Kaplinsky, 2000; Kaplinsky & Morris, 2001) to map distinctively and investigate how LVCs are organized and function in parallel to MVCs in the face of globalization. Second, we extend the GVC framework by developing and adding the gendered dimension of the value web

approach (Virchow et al., 2014) to analyse simultaneously the roles of governance and the inherent differentiated gendered relations in driving LVCs. Third, we draw out concrete and novel managerial and policy implications needed to develop LVCs further, improve the future competitiveness of smallholders sustainably and posit gendered opportunities. These managerial implications are of great importance for interested parties, such as smallholders and artisanal group leaders, while the policy implications are important for private firms and public stakeholders.

African countries are among those developing countries with a growing real GDP (approximately 3.8 per cent in 2018) that is largely driven by the increasing domestic demand (+6.7 per cent), but they still face development challenges with regard to favourable business environments (AfDB, 2019). Apart from often obstructive foreign trade policies, the diversity and complexity of the African private sectors and the inefficient smallholder integration into regional production networks especially represent major pitfalls (AUC/OECD, 2019). The LVC in the Nigerian shrimp and prawn sector is of particular interest for this research because it shares peculiar sectoral and structural characteristics with many agrifood sectors in other developing and transition countries. The LVC exists in a dualistic system with MVCs and is characterized by numerous artisans – about 1.2 million (Bondad-Reantaso et al., 2012) – most of whom are poor, limited in scope and operations, informally organized and dwell in the rural coastal areas (Agbo & Usoroh, 2015; Wategire & Ike, 2015). Despite its importance as a source of livelihood for artisans and for fulfilling culturally diverse needs for consumers in the domestic markets, researchers and development analysts have paid very little attention to it. As a result, many smallholders in the LVC in the Nigerian shrimp and prawn sector, similar to many LVCs in other developing countries, continuously face the challenge of effectively coordinating their activities and remaining competitive in dualistic systems. Contrarily, the MVC in this dualistic system,



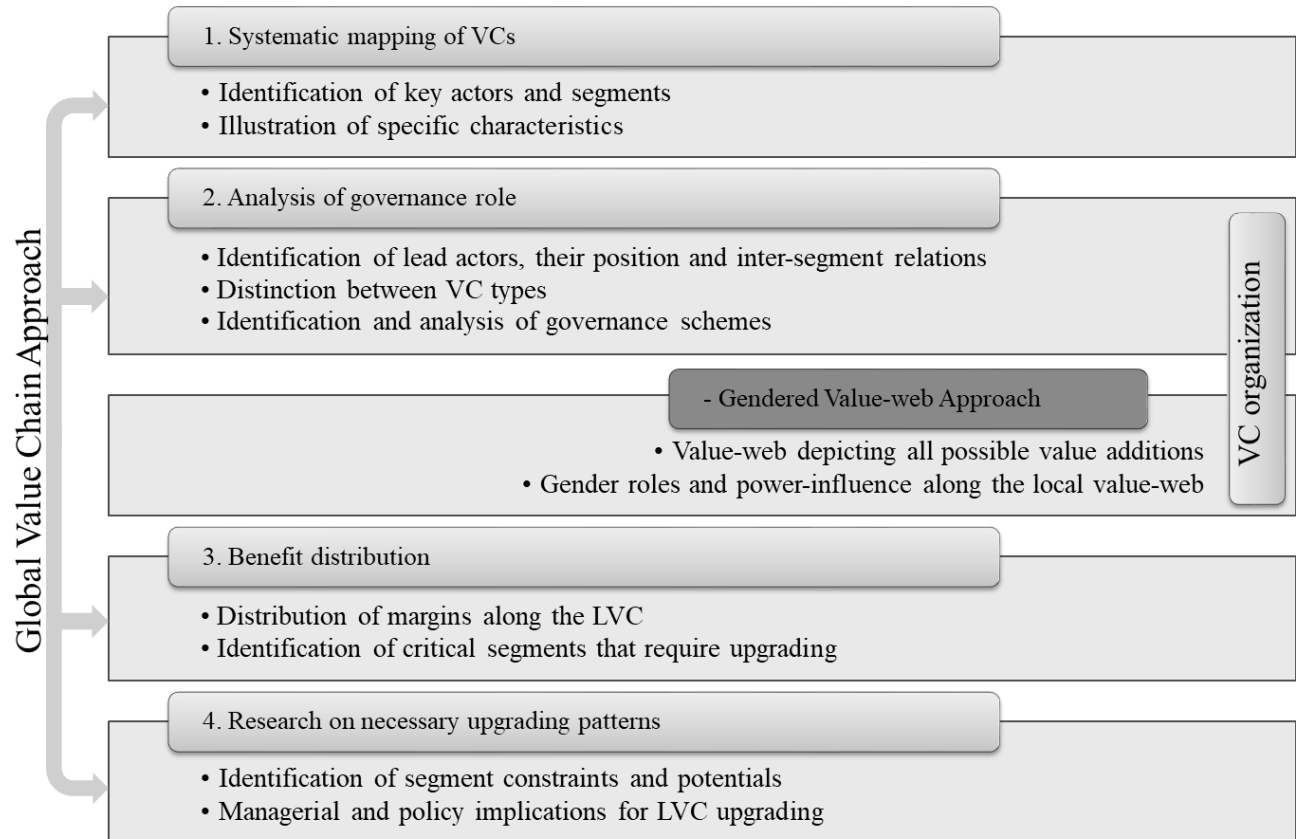
which is dominated by industrial fishing companies, has attracted more attention because it provides opportunities to earn foreign exchange. Uncharacteristically, both the MVC and the LVC command higher shrimp and prawn (SP) values per unit of catch, especially because the domestic demand for SP still outstrips the supply (Bondad-Reantaso et al., 2012). This suggests an opportunity to foster economic gains for the smallholders involved through upgrading and further expansion of the LVC. We expect that our results will help to clarify how LVCs that coexist with MVCs function and what strategies are needed for smallholder upgrading. Insights from this case can therefore be useful for other developing and transition countries, where LVCs are also underdeveloped and the smallholders involved are neglected.

The study is organized as follows. The next section describes the conceptual framework employed in the study. Second, the research methodology is elaborated, including the criteria for the selection of the study area and participants, data collection procedures, handling and analysis. Thirdly, the results and a discussion of the findings are presented, followed by the conclusions and implications.

## **2. Conceptual framework**

This study is based on two concepts: the GVC approach by Kaplinsky (2000) and Kaplinsky and Morris (2001) and the value web by Virchow et al. (2014). The GVC approach is useful for tracing patterns of production and linking geographically dispersed activities and actors in a chain (Kaplinsky, 2000; Kaplinsky & Morris, 2001). Although the focus of the GVC approach crosses international boundaries, new evidence suggests the regionalization of GVCs (Gereffi & Fernandez-Stark, 2016). Four dimensions (**mapping**; **governance**; **benefit distribution**; and **upgrading** in value chains), which have been further developed by Gereffi and Fernandez-Stark (2016) and Gereffi et al. (2005), have commonly been employed in the literature to analyse

effectively and understand fully the broader issues of value chains. With the first GVC dimension, the systematic mapping of value chains, the entire input-output process that brings a product from conception to consumers is presented. The main actors and their activities or segments, specific characteristics and dynamics of segments, like preferred suppliers, are depicted with maps.



**Figure 1: Conceptual framework**

Source: Authors' illustration

The second dimension emphasizes the role of governance. Governance in the GVC approach ensures that interactions between actors reflect control and coordination (Kaplinsky, 2000). In LVC governance analysis, lead actors are first identified, reflecting on their position, inter-relationships and influence sources (Gereffi & Fernandez-Stark, 2016). Then, the distinction of value chains is made based on the type of lead actors identified. **Producer-driven** chains are mostly found in capital- and technology-intensive industries and controlled by large producers,

while **buyer-driven** chains are mostly found in labour-intensive consumer goods industries and controlled by buyers (Kaplinsky, 2000; Kaplinsky & Morris, 2001). Lastly, the inherent governance structures in each segment are identified from the five governance structures defined by Gereffi et al. (2005) based on the complexity and coding of information shared and the competence of the suppliers involved.

**Table 1:** Gereffi's governance structures

Governance types	Description
Market	Typical of a spot market, the price mechanism is central, with little to no formal cooperation between actors. Low power relationship asymmetry exists, since the cost of switching to new partners is low.
Modular	Relationships between suppliers and buyers are tighter, with a high volume of information flow beyond price and semi-low power asymmetry. Suppliers take full responsibility for securing the generic processes/technologies needed to meet customers' specifications.
Relational	Interactions between suppliers and buyers are complex, with mutual dependence and high asset specificity managed through reputation, family and ethnic ties. Nevertheless, the lead actor can exert some levels of control in medium power asymmetry. Trust is built after repeated interaction, so the cost of switching partners tends to be high.
Captive	Characterized by high power asymmetry in which small suppliers are dependent on one or a few buyers. Producers face high switching costs by functioning under certain conditions set by a buyer, while the lead actor, whose competence tends to be outside production, exerts a high degree of monitoring and control.
Hierarchy	Products are complex and product characteristics are hard to transmit, so chains are characterized by vertical integration and managerial control.

Source: Adapted from Gereffi and Fernandez-Stark (2016) and Gereffi et al. (2005).

The third dimension is the assessment of how benefits are distributed to pinpoint critical segments that require upgrading. Different measures have been used to describe the distribution of benefits along value chains. For instance, Lie et al. (2012) used three measures: profit, employment benefits and non-monetary benefits like knowledge. Adopting these measures in this study will be problematic because of actors' heterogeneity and data unavailability. However, price has become an important measure of value since the 1990s, because product processing and differentiation significantly add to the margins (Dolan & Humphrey, 2000; Manning, 2015). Therefore, this study employs price as a measure of benefit distribution. Furthermore, the fourth dimension entails research on the necessary upgrading patterns. Four types of upgrading were identified by Kaplinsky and Morris (2001), namely **process**, which deals with how production

efficiency can be increased; **product**, which entails enhancing products' quality by either producing new ones or improving old ones; **function**, which entails changing the scope and combination of the activities performed; and **chain/inter-sectoral**, which involves moving into new production activities.

The GVC approach has been applied to analyse different value chains across the world. Bassett et al. (2018) used the concept to determine the influence of power relations on the upgrading of the cashew value chain in Cote d'Ivoire, from the production segment to exporting. The authors argued that power relationships are more important than quality in ensuring the proper functioning of the chain and in setting producer prices. However, their study created a gap regarding the inner workings through which different actors influence the price-setting mechanism. Nguyen et al. (2017) bridged this gap by analysing the value chain of exported white-leg shrimp in Vietnam and drawing conclusions on its organizational structure and drivers. They argued that middlemen drive the chain and transfer risk to the producers in the price-setting mechanism. De Marchi et al. (2013) leveraged the concept to develop an integrated theoretical framework that allows for the analysis of environmental upgrading strategies in the Italian home-furnishing industry. Conversely, the GVC approach has been applied to analyse LVCs. Lie et al. (2012) applied a theoretical framework that is based on the GVC to identify possibilities for upgrading in a Tanzanian goat milk yogurt LVC. The study warned against several constraints that could impede the upgrading over time. Clearly, the latter studies fused the GVC approach with other frameworks to contextualize the organization and upgrading strategies for the actors along the chains.

We draw on these studies by extending the GVC framework to include the gender dimensions necessary to determine the role of gender relations in ensuring the proper functioning of LVCs. Schumacher (2014) reviewed the studies that have conceptualized gender relations in GVCs and

offered insights into areas that are completely missing from the literature. According to the author, the analysis of differentiated gender roles in transnational networks highlighting gender decision-making power and influence is an important topical area that requires immediate attention. The FAO (2016) further developed a framework that captures gender issues in value chains and emphasized the importance of robust gender analysis in making effective recommendations about value chain upgrading strategies. The framework involves the inclusion of gender-sensitive information in the mapping of value chains. Apart from this, several studies have developed and delved into gender relations in value chains; however, contradictory findings on the roles and influence of women along value chains have been found (Barrientos et al., 2003; Schumacher, 2014). This gap appeared because studies employed approaches that are product specific and cannot deal with disaggregated gender information. The value web approach offers a great advantage by depicting all the value additions possible within the sector (Scheiterle et al., 2018; Virchow et al., 2014). The multidimensional framework of the value web approach provides the study with an avenue to describe certain social factors that could drive or ensure synergy in the inter-linkage of different local values in the sector. Although the value web is an innovative approach that has commonly been employed in business and biomass-based literature (Scheiterle et al., 2018), the relevance of its “web perspective” makes it crucial as a concept to depict disaggregated gender-sensitive information innovatively in this study. We extend the GVC approach by adding the gendered value web to the second dimension of the GVC approach (governance analysis) to assess simultaneously the roles of governance and gender relations in driving and ensuring the functioning of LVCs (the second sub-objective of the study).

### 3. Research methodology

#### 3.1 Study design

The study relies on qualitative primary data collected between December 2017 and January 2018 in Nigeria. The data collection involved three in-depth focus group discussions (FGDs) and twenty-one key informant interviews (KIIs). Questions that take into account the four dimensions of the GVC (systematic mapping, governance analysis, benefit distribution and upgrading strategies) and gender issues explained in Chapter 2 were asked during the FGDs and KIIs. To encourage a diverse and quite representative pool of respondents to participate, the study was conducted in several shrimping villages and markets across three states (Lagos, Akwa-Ibom and Delta) that were purposefully selected to gain insights across different socio-cultural zones. The first pool of respondents was identified by experts from the Nigerian Institute for Oceanography and Marine Research (NIOMR). In all, eight categories of actors were selected through snowball sampling, as shown in

Table 2 The data from artisanal producers and processors were obtained from two states – Badagry, Lagos, and Eket, Akwa-Ibom – because of their high level of shrimping activities. The data from traders, retailers and transporters were obtained from two large markets, namely Ibaka and Oron, Akwa-Ibom, and Warri, Delta, based on their high level of retailing and wholesaling activities. Additionally, a series of interviews with two fishing companies and experts (for triangulation) was conducted in Lagos.

**Table 2:** Details of the participants in the FGDs and KIIs

<b>Data identification</b>	<b>Participants</b>	<b>Type/frequency</b>	<b>Type and number of participants and years of experience</b>	<b>Number and gender of participants</b>
A B	Fishermen	2FGD 5KII	24 fisherfolk: 5 had >20 years 13 had 10–20 years 5 had 5–10 years 1 had no experience (helper)	25M
C D	Processors	1FGD 3KII	8 processors: 1 had >10 years	8F

			7 had 5–10 years	
E	Collectors	2KII	2 local collectors 2 had >5 years	2F
F	Logistics	1KII	3 transporters	3M
G	Retailers	2KII	2 processed retailers	3F
H		1KII	1 fresh retailer	
I	Fishing companies	1KII	1 company manager	2M
J		1KII	1 marketing manager	
K	Experts	1KII	1 researcher	1M
L		1KII	1 field officer	1F
M	Associations	1KII	1 group leader	3M
N		2KII	2 settlement leaders	

Source: Authors' illustration.

Notes: M: male and F: female.

### 3.2 Data collection

#### *Type of information obtained*

The FGDs and KIIs were guided by semi-structured questionnaires using open-ended questions to describe six themes that are relevant to analysing the four GVC dimensions and the gendered relations. These include information on the inputs; fish resources caught; main actors (indicating the relationship and governance mechanisms existing between actors); possible value addition to the SP (indicating associated price and quantity flow and market destinations); chain characteristics (indicating the historical evolution of the chain, contingent situations, difficulties and opportunities, etc.); and gender roles and power relations. Most FGDs and KIIs were conducted in local languages, except the KIIs with experts and fishing companies, which were conducted in English. The questions varied according to the category of the participants. For all the FGDs and KIIs, audio recorders and jotters were used to capture important details.

#### *The relevance of the net map to the study*

One important tool used during FGDs is the net map, which is often employed in participatory research methods (Scheiterle et al., 2018). The net map is advantageous because it helps us to visualize implicit knowledge and understand the interplay of complex value networks, power relations and actor roles. It allows us to involve respondents actively in the process of visualizing

differentiated LVCs, gender relations and influences, which are rather difficult to depict through conventional methods. The implementation of net maps was adapted following the steps described by Schiffer and Hauck (2010). First, prior to the start of the FGDs, the research objectives and significance of the study were explained to the participants. Then, the net-mapping steps were described to the participants to ensure that everyone understood the procedure, while permission to record the sessions was obtained. The first GVC dimension – the mapping of the LVC – started with the identification and naming of key actors and activities by the participants. The same logic was applied thereafter in the mapping of the value web to determine all possible value-adding activities. Here, the names of actors and their activities<sup>2</sup> were written on stickers and glued to A1-sized cardboard. Afterward, all the stickers were linked by the participants using markers to depict a chain. Next, the net map was modified either to rearrange it or to accommodate new actors/activities that had not been mentioned earlier, the quantity of catches and the price flow. Throughout each stage, the respondents were encouraged to argue their points until they agreed on a single conclusion, thereby increasing the reliability of the information obtained. The penultimate step involved the ranking of actors' power relations by the participants for the second GVC dimension. Questions regarding the importance and influence of each actor were asked to determine the power relations in the LVC. The participants were provided with flat button-like materials that could be piled up to form a tower. The number of materials in each tower was counted and noted for each actor named on the map.<sup>3</sup> For the gendered value web, activities in which both men and women were influential were also ranked. Finally, we ended each session by discussing the LVC and the web structure.

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<sup>2</sup> Different activities depicted different LVC segments.

<sup>3</sup> The actors deemed to have the most influence had a maximum of eight layers, while those with the least power relations had none.



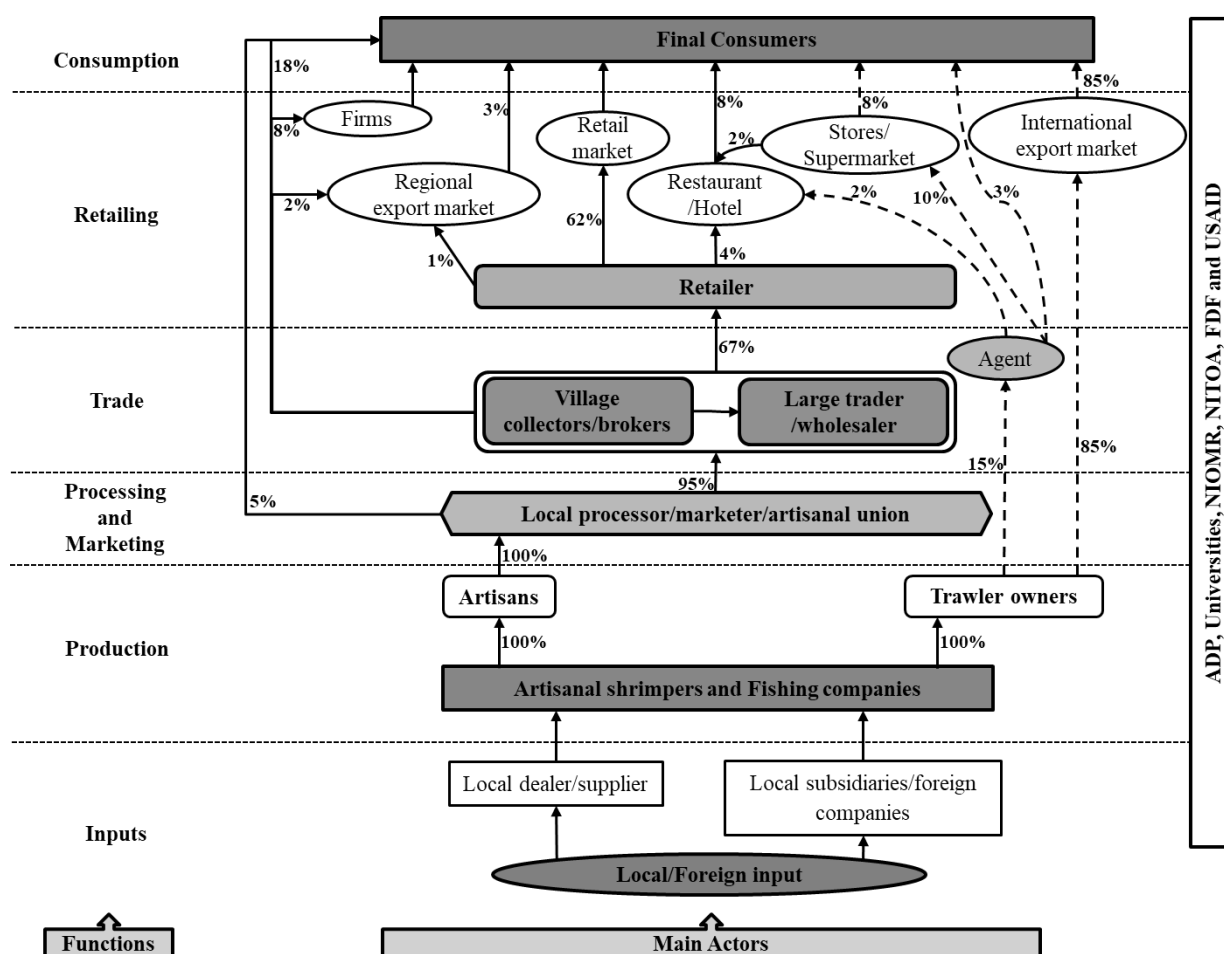
### **3.3 Data handling and analysis**

Content analysis of the qualitative data obtained was conducted in accordance with Mayring (2015). The first step of data analysis involved the transcription of audio recordings into a separate Word document template. The transcribed data were coded into nodes based on the broadly predefined thematic information listed in the “Study design” section. Important terms like codes, texts, metaphors, storylines and discourse coalition that reoccur in the data and are related to the themes were formed into nodes using Nvivo 12 plus. For the first sub-objective, relevant information presented in the net maps and data obtained from interviews were combined to portray the detailed LVC and MVC graphically. The key input–output components of these value chains were profiled to include the main activities/segments and key characteristics of the actors involved. Hence, the segments of the LVC and MVC were identified and differentiated by the value that they add to the product. For the second sub-objective concerning the identification of LVC drivers, information on different governance structures between each LVC segment and gendered roles in the value web were coded, illustrated graphically and analysed. The governance concepts to be analysed included governance schemes and lead actors, reflecting their roles, position and sources of power relations. An overview of the value-adding benefits accruing to each actor in the LVC is presented graphically to depict the third GVC dimension. For the third sub-objective, the data from FGDs and KIIs were further reviewed and coded based on the key constraints and opportunities for development in each segment of the LVC. This allowed for the derivation of segment-specific implications regarding necessary upgrading strategies as part of the fourth GVC dimension (Trienekens, 2011).

## **4. Results and discussion**

### **4.1 Organization of the Nigerian shrimp and prawn value chain**

In this section, we present the first dimension of the GVC approach by systematically mapping the value chain to address the first sub-objective. The Nigerian shrimp and prawn sector is organized along the two types of value chains, namely the MVC and the LVC, as presented in Figure 2. The MVC is dominated by industrial fishing companies, many of which are organized under the umbrella of the Nigerian Trawlers' Owners Association (NITOA) (Managers I&J). Figure 2 shows that the MVC is structured to target export and modern domestic markets because they can earn a premium for meeting export quality and quantity standards. About 85 per cent of the SP captured is exported, mainly to EU countries. Compliance with strict regulations and standards is strictly monitored and controlled by the Nigerian Federal Department of Fisheries. SP that cannot meet these standards is absorbed by the domestic markets (15 per cent of the total industrial capture). Most fishing companies sell through registered agents and not directly to final consumers (Company manager I). Overall, the producer–international markets–consumer link represents the predominant market channel in the MVC.



**Figure 2: Shrimp and prawn value chain**

Source: Authors' illustration based on FGD and KII

Notes: The flowchart indicates both LVC and MVC highlighting the sources of SP and their different marketing channels. The percentages depict the quantity flow of SP across tiers and were obtained based on participants' perception during FGDs and KIIs. Tick arrows are used to link actors and segments in LVCs while broken arrows depict MVC. Institutions that intervene to support and regulate the sector are listed in the box located at the right side of the figure. Lastly, several segments are listed on the left side of the chain, each separated by thin dotted lines.

The LVC is structured to target traditional domestic markets, firms and regional markets.<sup>4</sup> The majority of the demand for SP comes from the traditional domestic market, comprising the urban and peri-urban market and the rural market. In this type of value chain, all the SP captured by fishermen is sold off at the shore to fish mammals,<sup>5</sup> who, in many cases, process and market the SP. Fish mammals, if not selling through their union after processing, prefer to sell to traders.<sup>6</sup> Village collectors/brokers and large traders/wholesalers differ in their characteristics and activities (Collector E). Village collectors/brokers are often closer to landing sites, transact

<sup>4</sup> Very negligible exports are also made to OECD countries but are not profiled.

<sup>5</sup> The term "fish mammals" is used interchangeably with processors/marketers.

<sup>6</sup> Traders represent both village collectors/brokers and large traders/wholesalers.

frequently with fish mammals, service markets around the landing sites and are sometimes missing along the LVC if the landing sites can easily be reached by large traders/wholesalers. Village collectors/brokers sell to large traders but not vice versa (Collector E). The study depicts these differences by profiling these actors separately but in the same segment, as shown in Figure 2. Of the total SP processed, 95 per cent is sold to traders who demand in bulk and with whom they have long-term relationships. The remaining 5 per cent is bought by final consumers around the processing sites (Processor C). Traders sell about 67 per cent of the SP captured to retailers, while about 18 per cent is sold directly to the final consumers in the traditional domestic markets. Contrarily, retailers sell very significant quantities (62 per cent) directly to the final consumers through the local retail markets, while the remainder ends up in local restaurants and hotels (4 per cent) and regional markets, such as Cameroon (1 per cent). The interviews with retailers indicated that industrial firms using SP as raw materials and regional export markets have sprung up and are being targeted along the LVC (Retailer G). This finding highlights further developments in the LVC from the situation in the past, in which the demand from firms and regional markets was missing (Agbo & Usoroh, 2015). However, industrial firms demand SP in smaller quantities (8 per cent) through procurement agents who are well connected to the processors and village collectors (Processor C). Similarly, the quantity supplied by traders to the regional markets is quite negligible (2 per cent). Accordingly, the producer–processor–trader–retailer–consumer link represents the most important and predominantly used market channel in the LVC.

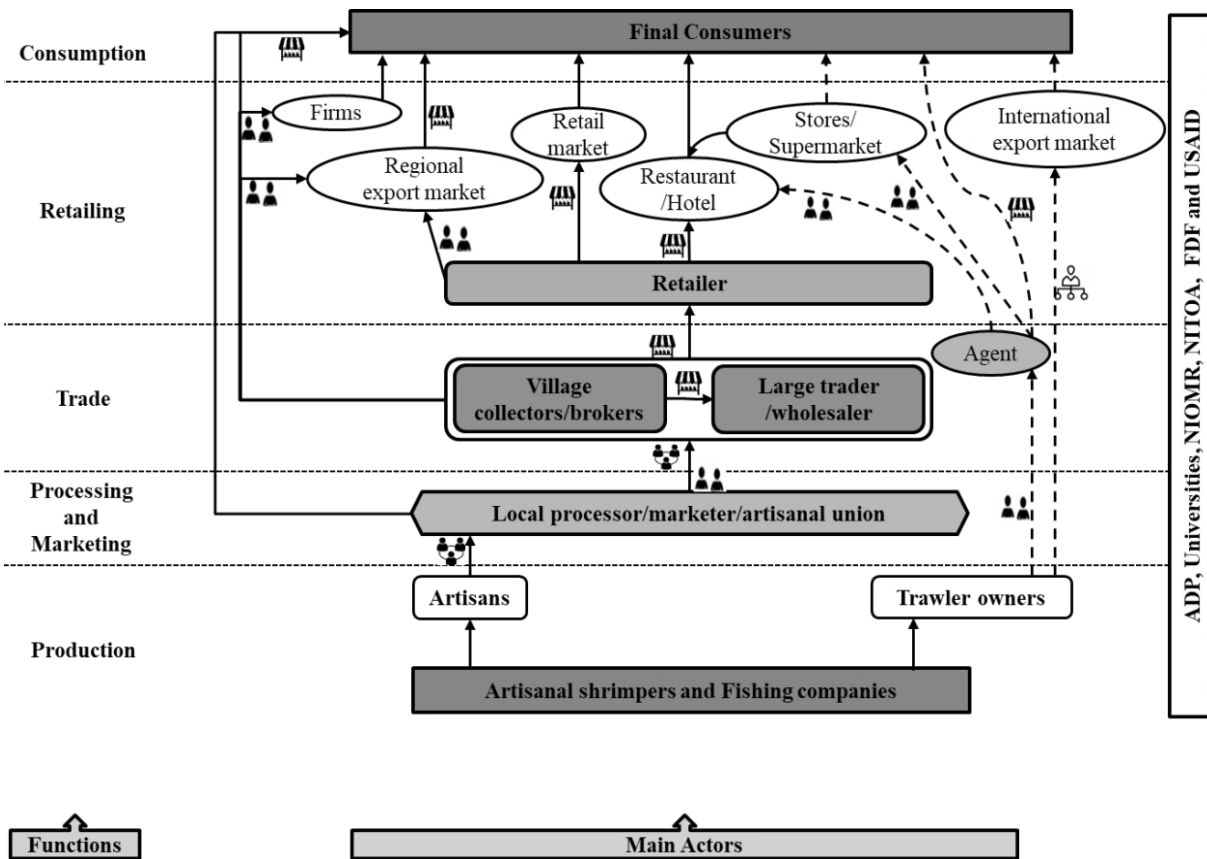
## **4.2 Connecting landing sites to the markets: drivers of LVC**

In this section and section 4.3, the answers relating to the second sub-objective are presented. The study seeks to identify the key drivers that shape the LVC and ensure the smooth flow of SP by analysing the second GVC dimension and the gendered value web approach.

### ***Second dimension: governance themes and their role along the LVC***

Reflecting on the second dimension in the conceptual framework, the LVC is an unregulated buyer-driven chain in which traders dominate and drive the chain because they have better access to rich market information and higher purchasing and bargaining power. The power rankings made by the respondents during the FGDs indicate that traders drive the overall chain network. In addition, during the FGDs, fishermen described traders as “a group who has more power and influence” during negotiations and price-setting generally, because they drive the aggressive distribution of SP (Fisherman A). This is common in many African sectors in which intermediary traders are crucial to the proper functioning of value chains (Agbo & Usoroh, 2015; Gereffi et al., 2005; Maertens et al., 2012). The dominance of the traders erupts from their relationships with multiple actors across tiers, as depicted in Figure 3. First, from both ends of the chain, traders can receive essential market information that is crucial for their business decision-making processes, especially for spatial integration and price determination. Traders engage in *hub and spoke business models* in which they source products from different origins, consolidate them and send them to different markets. Traders supplying firms and regional markets also adopt this model but with the more substantial relationship needed to meet certain specifications. Although Agbo and Usoroh (2015) concluded that a smooth and free flow of information exists, this study opines that traders often hold up essential market information as an advantage to themselves, which results in unsmooth and poor marketing information across tiers, especially for artisanal producers and processors (Processors C&D). As noted during the FGDs with fishermen and processors, this causes a low level or even a lack of trust in fish mammy–trader relationships (Processor D). Secondly, traders are faced with relatively less liquidity pressure and risk, so they are able to make more careful business decisions than artisans and shift negotiations in their favour. Conversely, most fish mammies sell at the mercy of traders who buy in bulk, due to their

liquidity problems and the resultant pressure to sell quickly. Thirdly, traders have relatively larger working capital resources, since they can access several sources of income, including credit facilities.



**Figure 3: Governance typologies along the shrimp and prawn value chain**

Source: Authors' illustration based on FGD and KII

Notes: Different types of governance in the chain which include: market; modular; relational; and hierarchy.

As shown in Figure 3, the transactions in the LVC are mostly governed on the spot market in which the price is set by both the supplier and the buyer after they have both wielded their negotiating and bargaining power. An exception is the collective selling-price fixing and marketing by processors/marketers through unions in some shrimping communities. Although producer groups also exist, there were no indications of collective marketing (Leaders M&N). Producer groups target their activities towards improving production-related activities, like employee sourcing and political lobbying (Leader M). With the governance mechanism “market” dominating the LVC, actors are faced with no entry barriers, thereby resulting in a relatively long

and spatially diverse chain with simple interactions. In an attempt to avoid incurring additional transaction costs, fish mammies sell directly to traders at their processing site or nearest market hub. Over time, this could develop into a strategic and mutually dependent relationship.

Further, the interviews with processors indicated the evolution of the LVC towards the divisiveness of the production and processing segments. Around the mid-1990s, though on a very small scale, fish mammies dominated both the production and the processing segments of the LVC by shrimping or owning production inputs, processing and marketing (Agbo & Usoroh, 2015). Over time, as the LVC developed, and as observed by Trienekens (2011), fishermen and fish mammies became specialized in the segments in which they have a comparative advantage (Leaders M&N). Most fishermen now own their production inputs and shrimp under less exertion of the processor's control. Usually, typical producer–processor/marketer transactions in African LVCs are based on market governance (Simon et al., 2016) and in some cases on formal captive governance (Markelova & Mwangi, 2010; Reardon et al., 2009). The interviews with producers suggested an evolution in the upstream LVC in which producer–processor relationships are rather based on relational governance (Table 1). Due to the transactional complexity arising from uncertainty at the supply base, fishermen form strategic bonds with fish mammies that are largely managed by reputation, family or ethnic ties and social and spatial proximity (Gereffi & Fernandez-Stark, 2016; Gereffi et al., 2005). It is therefore common to see fishermen selling to fish mammies who are their wives or relations in the LVC. Although previous studies have not observed this relational governance (Agbo & Usoroh, 2015), this study posits that it provoked the emergence of new processing and marketing segments in the LVC. The relational governance ensures that the activities of both producers and processors are to a certain extent synchronized and thus an important factor that drives the LVC. In this type of arrangement, as also observed in the Philippine tawilis chain (Trienekens, 2011), fishermen sell to the same processor(s) for years

(Processors C&D). While both parties' activities have distinct and mutually exclusive costs and benefits, shoreline prices or revenue-sharing formulas are often agreed when SPs are purchased or product credit is made, respectively. Both parties enjoy a certain level of autonomy, as they can switch to other actors temporarily to maximize their own gains. Despite this, the power ranking of actors during the FGDs with artisanal fishermen suggested that fish mammals are important drivers of the LVC (Fishermen A&B). One fisherman said, "They (fish mammals) are very important in this system ... They have the ability to influence certain things within the community and along the supply chain" (Fisherman A).

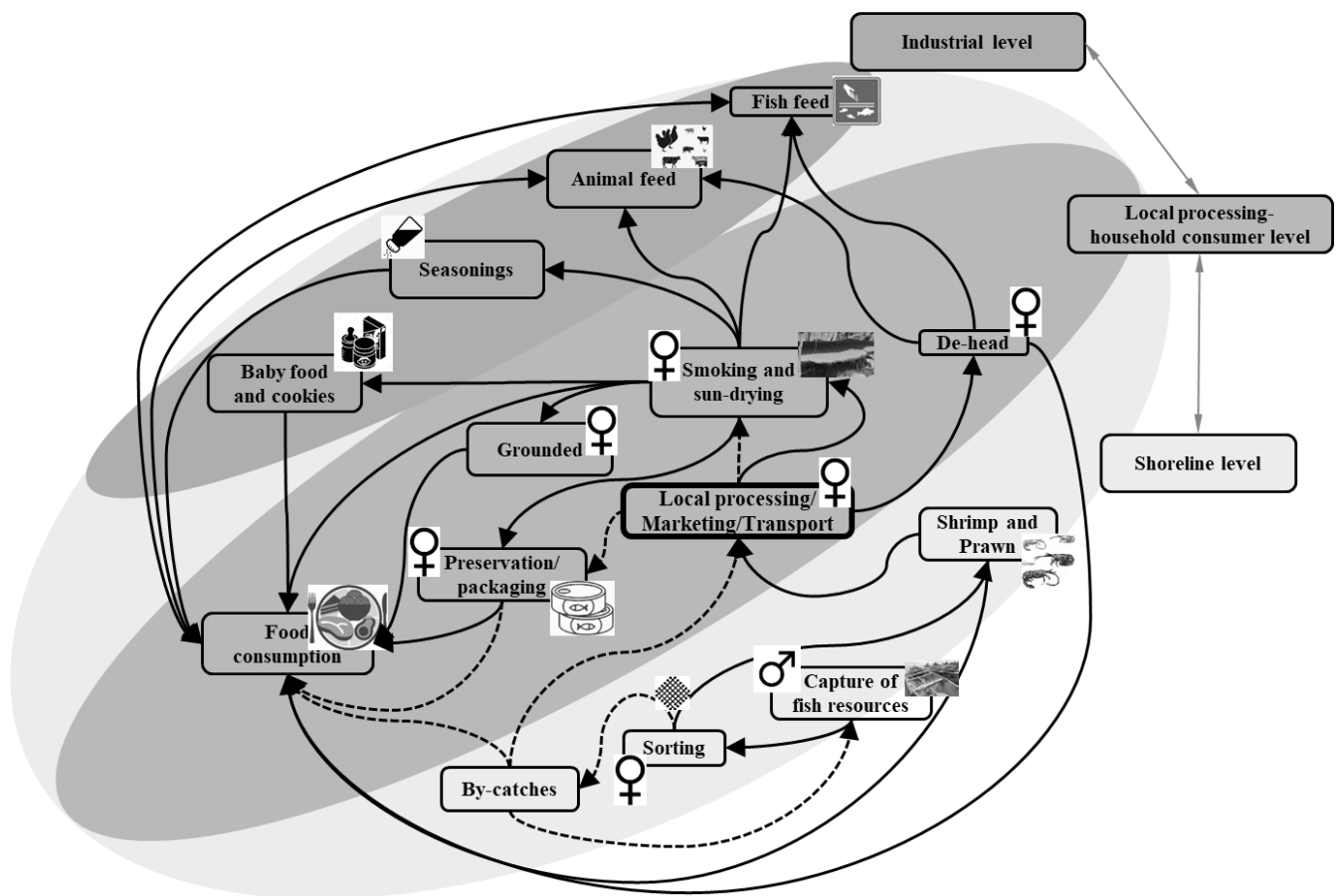
### ***Gendered value web in the LVC***

SP value web<sup>7</sup> activities are generally undertaken on three levels, namely the *shoreline level*, at which most of the exchanges between producers and processors take place; the *local processing–household consumer level*, at which most of the local processing and consumption are performed after active marketing by the middlemen; and the *industrial level*. Fish mammals process SP by smoking on shelves constructed for this purpose or sun-drying.

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<sup>7</sup> Here, the value web only captures all the possible value additions along the LVC.





**Figure 4: Gendered value-web in LVC**

Source: Authors' illustration based on FGDs and KIIs

Notes: The study depicts the different types of value addition possible for SP in LVC. It also depicts gender dominance in different activities: ♀ represents women dominance while ♂ depicts men dominance in the chain. Thick lines represent the flow of SP while the broken lines represent the flow of by-catches.

Several important trends that support the importance and influence of fish mammies along the LVC can be summarized from the gendered value web. First, the value web supports the existence of a strict division of labour and specialization based on gender comparative advantages, especially at the supply base. Men have a comparative advantage in shrimping mainly because of the physicality of driving plank canoes and drawing nets (Fishermen B), while offshore security was another reason expressed in some areas. However, “women are expert in drying SP ... Fishermen spend hours in the water and so rely on women to dry it, else SP will spoil” (Fisherman B). Second, fish mammies are important providers of a financial cushion for many fishermen who face high cash constraints from an uncertain supply by providing them with zero-interest credit, repayments of which are made in subsequent transactions. “That is why you

have a lot of fishermen with very white hair ... If you get one basin which is not up to your fuel cost, they (fish mammies) will buy the little basin you catch and pay your money before trading on it. That is why many women are wealthier than most of the men here” (Fisherman A). “It is those women who sometimes lend us money so that we can operate and they will take back their money after the sale of the SP” (Fisherman A). This has an important impact on the LVC, because a constant supply of SP can be attained from the supply base. Third, fish mammies encourage most industrial and local value additions for SP through their processing or handling activities. Smoking or sun-drying of SP is crucial to increase its shelf life, enhance handling and make it available in forms that are generally acceptable to most local buyers. This is particularly important for fishermen, as they are assured of a consistent demand and no financial loss from the deterioration of SP after landing. As shown in Figure 4, all possible industrial value additions of SP come only after it has been processed by fish mammies. Fourth, fish mammies serve as the face of the supply base and can determine the LVC’s shape by deciding to sell to either traders or local consumers. Fish mammies are also crucial in determining what and how the benefits are distributed to the producers. The repayment time and margin that fishermen receive depends on how fish mammies fare in their negotiation with powerful middlemen, especially when exchanges between fishermen and fish mammies are based on predetermined sharing formula (Fishermen A). As a result, fishermen seek to transact with fish mammies who are agile, understand the business relationship and can provide a financial background (Fisherman A). Similar to newer findings in some African LVCs (FAO, 2016; Kamau & Ngigi, 2013; Schumacher, 2014; Udong et al., 2009, 2010), interviews and discussions with several actors also prove that women and their roles are shifting from being inferior and dependent to being one of the major drivers of chains at and beyond the supply base. This is also clearly highlighted in

Figure 4, in which most value-adding activities beyond the supply base are managed by women, even though the purchasing and bargaining power in the LVC could be independent of gender.

### **4.3 Third dimension: benefit distribution among actors in the LVC**

The analysis, as well as the results shown in Figure A1.1, suggests inequitable benefit sharing in the LVC. Generally, more benefits accrue to lead actors (Trienekens, 2011), in this case, traders. If large traders/wholesalers sell to big cities, they earn three times (+200 per cent) the shoreline price (N800 = 2.20 USD)<sup>8</sup> per kg received by fishermen. Retailers can also earn four times (+150–325 per cent) the shoreline price. Contrarily, fish mammies earn an additional 7 to 25 per cent depending on whether they transact with the final consumers or the traders. The strategic mutual reliance between fishermen and fish mammies means that uneven benefit shares are given to fish mammies also resonate with fishermen. It should be reiterated that the inequitable benefit shares of fish mammies cannot be regarded as indirect gender discrimination of fish mammies, since the LVC is largely in women's realm; that is, most traders and retailers are also women. However, the result tilts towards the theory that smallholders generally suffer from more inequitable product market effects in the LVC than in MVCs (Barrientos et al., 2003; Maertens & Swinnen, 2012; Schumacher, 2014). Therefore, further development of the LVC requires necessary upgrading strategies that will align the benefits better with the supply base.

### **4.4 Fourth dimension: smallholders' upgrading strategies in the LVC**

This section addresses the third sub-objective. The presence of several challenges that still inhibit the LVC's development is obvious, even though there is the potential for producer and processor upgrading.

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<sup>8</sup> 1 USD = N360

Table A1.1 summarizes the key constraints and opportunities related to upgrading in the production and processing segments. The constraints at the supply base significantly revolve around market access and orientation, the unavailability of innovation resources and physical infrastructure and institutions (Trienekens, 2011).

***Public constraints and opportunities at the supply base***

The institutional supply-side pillars emphasize the roles that the government (public) and private sectors play in providing an enabling environment for artisanal fishermen and fish mammals (AUC/OECD, 2019; Trienekens, 2011). Fishermen lamented about the neglect by the government (Fishermen A–B). Artisanal fishermen lack access to a range of complementary assets, infrastructure, finance, technical assistance and skills that are required to improve their operational efficiency and product quality and effectively link them to the growing local demand. The lack of basic infrastructure, like tarmacked roads, has prevented many smallholders from selling directly to final consumers and limited the activities of private stakeholders. Apart from these, the regulation and enforcement of relevant laws to control pollution in water bodies and environmental degradation are lacking. These externalities negatively affect the supply (Fisherman A). Depending on the available locally fabricated inputs, fishermen expressed that they are technically unable to deal with naturally occurring constraints like seasonality in the supply and bad ocean weather (Fisherman B).

**Table 3:** Constraints and opportunities in the production and processing segments

<b>Segments</b>	<b>Key constraints</b>	<b>Opportunities</b>
Production and supply	High natural seasonality/instability in production High seasonal demand High asset specificity and costs Conventional shrimping inputs Lack of basic and financial infrastructure Information asymmetry Limited incentive to store SP further	High domestic demand Increasing post-harvest value Collective action to upscale supply Communal structure to overcome constraints
Processing	Quality variability Lack of a cold chain	Upscaling the quantity processed Collective action to overcome constraints

	Limited access to modern techniques Low education and financial illiteracy Lack of basic and financial infrastructure Insufficient working capital	Increased processing hours
Marketing	High transportation cost Information asymmetry Limited market outlets Low negotiating power Huge competition Limited marketing skills Unstable demand and high price fluctuation	Collective marketing and price determination Weekly traditional markets

Source: Authors' illustration based on FGDs and KIIs.

Additionally, the lack of basic physical infrastructure often limits fish mammals, increases their processing and transportation costs and consequently results in uncompetitive market prices. Generally, higher costs are incurred in shrimp communities with no direct access to some basic infrastructural facilities, like electricity and tarmacked roads. The lack of electricity in many shrimp communities means that certain opportunities, like upscaling sales, longer hours of processing and cold processing, cannot be taken (Processor C). This significantly decreases their possibilities to target new markets and reduces their bargaining power. Additionally, similar to value chains in East Africa, a lack of access to modern processing facilities reduces fish mammals' incentives to improve and attain consistent quality (AUC/OECD, 2019). There are opportunities for quality upgrading that fish mammals can capture. However, they need to spend more time and effort to ensure that the product quality is uniform and the products are free of contaminants. Wealthy consumers in the urban and peri-urban areas are sensitive to product quality and willing to pay a premium for high-quality levels (Researcher K).

Institutionally, the government still needs to provide an enabling environment for private firms/stakeholders to act and make inclusive policy instruments to reposition and involve smallholders progressively along the LVC. Policy instruments that border on the provision of location, gender-sensitive infrastructural and financial facilities and modern technologies are generally absent in most shrimp communities. These are essential to improve the efficiency of

smallholders and enhance equitable benefit sharing. There was no evidence of public-private coordination, which includes support from the network of fishing companies in MVCs and non-chain actors, in most communities. As a result, smallholders generally lack technical assistance, training and market information and find it hard to organize themselves better into groups (Trienekens, 2011). Furthermore, firms in the SP-based value web still need technical infrastructure, a skilled labour force and financial instruments that can support innovativeness, ensure a consistent demand and aid further research to develop markets (AUC/OECD, 2019).

### ***Organizational constraints and opportunities at the supply base***

On the institutional demand side, the smallholder producer–processor interface often lacks coordinated vertical and horizontal relationships, resulting in ineffective production and business decisions, high market information asymmetry and severe holdup problems (Adekambi et al., 2016; Watabaji et al., 2016). The interviews with fishermen revealed that they often supply SP continuously even when fish mammals have reached full capacity or when the demand is low. This often results in holdups and severe liquidity problems for fishermen, especially when exchanges with fish mammals are based on credit and profit-sharing formulae. Consequently, we found that smallholders are negatively affected by huge product holdups. Fishermen revealed that they experience less purchasing and bargaining power when the holdup of products is longer than expected (Fisherman B). Furthermore, there is inefficient dissemination of the available market information to smallholders at the supply base, because traders hide information while several non-functional or uncoordinated horizontal relationships still exist in many shrimping communities. Hence, many smallholders are inefficient, incurring higher production and transaction costs (Wategire & Ike, 2015). Additionally, information asymmetry from the unsynchronized and uncoordinated activities of neighbouring shrimping communities results in spatial price differences, of which traders often take advantage. The result shows that many fish

mammies are not willing to adopt modern technologies, for example for smoking and drying SP, and show scepticism towards their effectiveness. “You cannot use any other technology to process SP effectively” (Processor D). However, there are opportunities to reduce the processing costs for fish mammies if modern techniques are used instead of the conventional method, which is unsustainable health-wise and environmentally (Fisherman A). Fish mammies’ scepticism is compounded by the lack of access to extension services and government-sponsored training, which could teach and encourage them to discard conventional techniques. Lastly, we observed that the location of many processing sheds is often unfavourable, hard to reach or far from landing sites; thus, fish mammies incur higher costs to maintain sheds and transport SP.

Finally, the evidence from the interviews with middlemen and experts indicates that the mid-stream is also constrained by several challenges that resonate back to the supply base (Table A1.1). Among others, middlemen in the LVC face high market turbulence and transaction costs. As in other African LVCs, the major expense for middlemen is transportation. Middlemen often increase the price of SP to accommodate and compensate for the high transport costs incurred (Udong et al., 2010) or, as found in this case, transfer the risk to smallholders at the supply base by wielding their negotiating power to reduce smallholders’ margins. Apart from the government providing an enabling environment, middlemen can alleviate these constraints through collective transportation, which helps to distribute the costs across several traders and marginally reduce the costs for individual traders. Consequently, this will reduce the amount of risks transferred to smallholder producers and processors.

## **5. Conclusions and implications**

In this paper, we extend the GVC framework (Kaplinsky, 2000; Kaplinsky & Morris, 2001) towards the gendered value web approach (Virchow et al., 2014) to uncover LVCs’ (1)

organization, (2) governance themes and gender roles for value addition and (3) smallholder upgrading strategies in developing countries' dualistic sectors using the example of the Nigerian shrimp and prawn sector. The LVC map indicates that the predominant marketing channel is a long chain of producer–processor/marketer–trader–retailer–consumer (see Table 6). Against the background of LVCs, this study finds the LVC structure to be well defined and able to remain competitive despite facing uncertain external situations and neglect. Historically, the LVC has evolved over time in response to these contingencies (Agbo & Usoroh, 2015; Trienekens, 2011). From the analysis of the GVC governance dimension, the relevant drivers of the LVC were identified. The LVC, being a buyer-driven chain, is clearly driven by competitive traders who engage in an aggressive hub and spoke marketing model. The result shows that the coordination mechanisms and business strategy between producer and processor relationships evolved in response to a greater demand, an unstable supply, technological advancement and the highly perishable nature of SP at the supply base. This led to the emergence of a new segment at the supply base (processing and marketing), as observed in this study. Further in-depth governance analysis shows that strategic relational governance and business strategies between production and processing segments are actually crucial in ensuring a constant and smooth supply of SP from the LVC's supply base to the midstream. Furthermore, the analysis of the gendered value web highlights the vital roles that women play in ensuring a smooth flow of SP along the LVC (FAO, 2016; Kamau & Ngigi, 2013; Schumacher, 2014; Udong et al., 2009, 2010). For example, female processors/marketers act as a financial buffer for many producers, a point of contact and a precursor to all midstream value additions in the value web.

Therefore, potential managerial and policy interventions for effective upstream upgrading and LVC development should simultaneously take into account segments that are mutually dependent and based on differentiated gender relations (Schumacher, 2014). As a strategic business plan, the



study suggests an initial focus on the domestic and regional markets until rigorous process and product upgrading at the supply base are achieved. To attain process upgrading, smallholder producers and processors at the supply base need to optimize the coordination and collaboration processes with their trading partners and competitors, respectively (Adekambi et al., 2016; Trienekens, 2011; Watabaji et al., 2016). We suggest better coordination of the producer–processor relationship in which concrete business strategies and plans for shrimping activities are made. Additionally, smallholders need to intensify the horizontal bonds. Existing groups need to be empowered to encompass strategic marketing objectives that benefit members, while new groups are needed in areas where they do not exist (AUC/OECD, 2019). In particular, collective marketing seems to be the imminent cost-effective approach for fish mammals. Collective price determination would also increase fish mammals’ negotiating power, since the price would be the same for buyers in the area (Dürr, 2018; Lie et al., 2012; Trienekens, 2011). Although this is clearly difficult, smallholders and groups in adjacent shrimping villages also need to coordinate better to integrate spatially and ensure uniform prices at neighbouring landing sites. We posit that only after process upgrading is achieved can product upgrading begin at the supply base, in which smallholders shift to supply high-quality SP (Trienekens, 2011). In addition, a cold chain, further development of local processing and industries in the value web and the targeting of institutions, like a school feeding programme, are good business strategies to differentiate SP, maintain value and provide constant markets for a potential consistent supply from the supply base (Lie et al., 2012).

There are a few limitations to the study. First, the geographical scope of the study, focusing on just three states, means that certain hidden heterogeneous characteristics might affect the activities and that the choice of LVC governance schemes might have been omitted. Validation by external experts was performed, while the data were triangulated with several sources in

different states to confirm the consensus. Our sampling method – snowball sampling – potentially biased our selection of experienced and better-linked respondents. Despite these limitations, the data obtained enabled an understanding of the overall organizational structure and the derivation of necessary upgrading strategies for smallholders. The upgrading strategies highlighted are, however, without implications for cost and sustainable production. Future research can determine the most cost-effective choice of upgrading for smallholders and assess the sustainability of the current production technique and efforts. Furthermore, the study identified an array of inter-relationships and governance measures that are important for the effective functioning of the LVC in the face of changing situations. Future research should pay simultaneous attention to segments with mutually dependent gender roles and determine the most effective inter-relationships and governance measures necessary to fit segment-specific situations and enhance the equitable benefit distribution.

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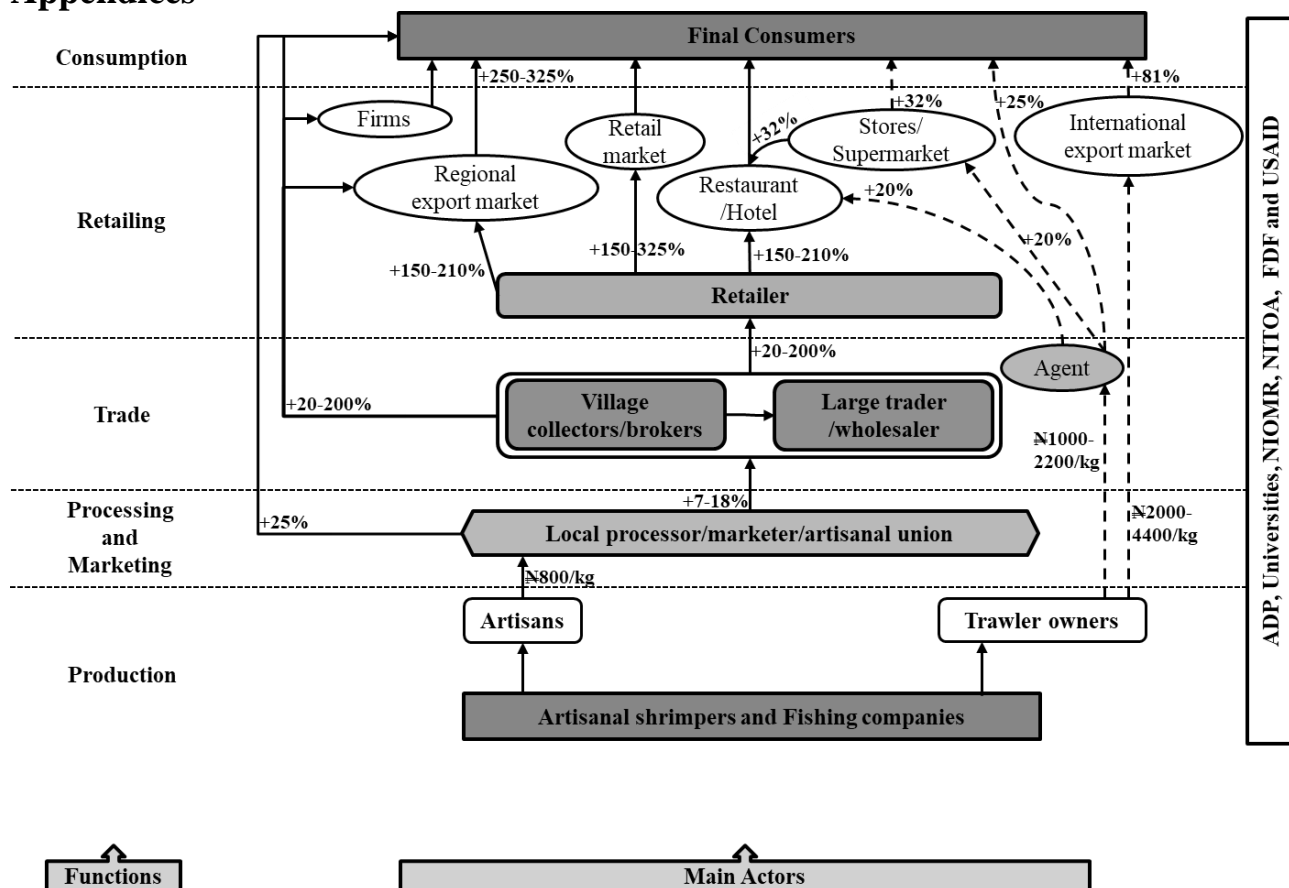
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## Appendices



**Figure A1.1: Distribution of additional margins in the value chain**

Source: Authors' illustration based on FGDs and KIIs. SP shoreline prices are provided per kg while additional margin accruable to actors in each segment are in percentages.

**Table A1.1: Constraints and opportunities in the mid and downstream of LVC**

	<b>Key Constraints</b>	<b>Opportunities</b>
Village collection/broking	High transaction cost High competition with other traders Challenges to have a constant supply and meet large local demand Long-distance to the collection site Insufficient working capital Wild price fluctuations	Better local market information High demand from local markets Premium price Several differentiation strategies Possibility for cold chain
Large trading/wholesaling	Higher transaction cost Lack of cold chain Competition from other traders Challenges to have a constant supply and meet larger urban demand Very long distance to the collection site Infrastructural decay Wild price fluctuations	Better chain information Huge demand Premium price Several differentiation strategies Huge capital base
Retailing	Competition from other fish resources Externalities Limited marketing skills Quality variability Unknown market demand Challenges to have a constant supply	High demand from urban and peri-urban areas Possibility for cold chain
<i>Peri-urban markets</i> <sup>9</sup>		
Local retail markets Restaurants Local kiosk Institutions	Competition from other fish resources Spatial price difference Limited local purchasing power Challenges to have a constant supply Limited marketing skills and information Unknown market demand Quality variability	Several differentiation strategies Possibility for cold chain Collective sourcing Public school feeding program and hospitals Government support Premium price Road-side food vendors
<i>Urban markets</i>		
Restaurants Large market hubs	Competition from other fish resources Challenges to have a constant supply Stall rent Quality variability Huge competition	Hotels and university cafeterias Huge demand Premium price Collective sourcing to lower transaction cost Huge demand

Source: Authors' illustration based on FGDs and KIIs

<sup>9</sup>To give an overview of shrimp retail markets, we based the section on the perception of the three retailers interviewed. Shrimp retail market is very diverse in Nigeria.