

How quality conventions shape the governance of the dairy value chains of Senegal

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Keywords

Milk, value chain governance, quality labels, conventions, dairy industry, Senegal

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Summary

Background: Over the past few decades, the Senegalese dairy sector has undergone a rapid transformation. Urbanization and shifts in urban consumers' eating habits have contributed to increased demand for dairy products and the emergence of new quality requirements. **Aim:** This paper examines how quality conventions influence the governance of dairy value chains in Senegal. We argue that value chain governance is not only determined by transaction characteristics, but also by how "lead firms" incorporate different quality conventions and translate these into value chain governance mechanisms. **Methods:** Through semi-structured interviews with consumer groups and stakeholders in the dairy value chain (producers, importers, processors, and retailers), we collected information on consumers' selection criteria for dairy products and processors' quality strategies, as well as on coordination mechanisms, contracts, and power relations within the value chain. **Results:** Our results show that the way lead firms normalize consumer expectations leads to specific organizational mechanisms in buyer-supplier relationships. Some combinations of quality strategies and governance mechanisms are better suited to fostering the sustainability of the local milk value chain in terms of social and economic development. Processors building viable relations with local milk producers are in particular ensuring the sustainability of the value chain, since they are able to cater to consumer preferences for fair and local milk-based products, while offering the guarantee of food safety processes. **Conclusions:** Our study highlights the indirect power that downstream actors (consumers) have on upstream actors (producers) via strategies (normalization) implemented by actors operating in an intermediate segment of the chain (processors). In other words, it shows that consumers, through their purchasing preferences, are playing a key role in the development of the local livestock sector.

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■ INTRODUCTION

Over the past few decades, the Senegalese dairy sector has undergone a rapid transformation. Urbanization and shifts in urban consumers' eating habits have contributed to increased demand for dairy products and the emergence of new quality requirements (Broutin et al., 2007; Dieye, 2003). Consumers have been adopting "exotic" eating styles,

such as drinking coffee with milk for breakfast, consuming yogurt, and using cheese to prepare dishes. They also are becoming increasingly strict about food safety standards, paying attention, for example, to the type of packaging used (Bastard et al., 2014; Broutin et al., 2006; Duteurtre and Corniaux, 2013). Dairy products, which were traditionally associated with pastoralist contexts and the informal economy, are now being processed in industrial facilities and marketed through formal channels. An important factor driving this industrialization process is the demand for safe and standardized products. Yet at the same time, there is an increasing appreciation for locally sourced agro-food products. Some studies indicate that there is a potential for dairy companies processing local milk to increase their market share because consumers view their products as being simultaneously safe and symbols of local identity and development (Broutin et al., 2006; Ferrari, 2021). Moreover, large foreign dairy export companies (such

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as the French companies *Danone* and *Sodiaal*) may aim to promote the collection of local milk as part of their Corporate Social Responsibility strategies.

Taking advantage of these trends, dozens of dairy processing units have been set up in urban and peri-urban areas to supply cities with industrial dairy products (Corniaux et al., 2014; Dia, 2009; Ferrari, 2017). These products are made from imported milk powder, local raw milk, or a combination of the two. However, despite the prevalence of livestock farming in Senegal, which is mainly practiced by pastoralist households, only 7% of local raw milk is industrially processed (Duteurtre, 2007). Imported milk powder is more competitive in terms of both price and non-price advantages, such as accessibility, availability, and quality (Desmoulin, 2006). The abolition of the European Union milk quotas in 2015 has tipped the balance further in favor of imports, especially of fat-filled powdered milk (Corniaux et al., 2021; Orasmaa et al., 2016) especially in the EU's biggest exporter countries. This review aims to project the possible impacts of this policy change in West Africa. Several factors, including a predicted increase of exported European whole milk powder (40 % increase in 2015-2025).

It is key to understand whether and how local production can improve its market share in the dairy industry, and contribute to the prosperity of rural areas and communities. This is an extremely important challenge for Senegal, as a significant portion of the Senegalese population relies on animal products for their livelihoods. Milk plays a key role in the pastoralist household economy because it allows households to cover their current consumption spending (Wane et al., 2010). This helps them avoid having to sell off animals in their herd, which can render households more vulnerable to climate and economic shocks. However, the high transaction costs related to local milk collection discourage industrial processors from engaging in this activity (Ferrari, 2017). Production in harsh environments like the Sahelian drylands also varies greatly from season to season and year to year. Moreover, pastoralist households are scattered over vast areas and are far from the main markets (urban areas). To overcome these constraints, several dairies prefer to process milk powder, exclusively or in combination with local milk, which allows them to fully exploit their processing capacity throughout the year (Corniaux, 2003; Corniaux et al., 2014, 2005; Ferrari, 2017).

This article seeks to determine whether the new trends taking place downstream in the Senegalese dairy value chain (e.g., changes in consumer preferences) are impacting upstream segments and contributing to the sustainable development of local dairy production.

■ THEORETICAL FRAMEWORK

To answer this research question, we have drawn from global value chain (GVC) governance and convention theories.

GVC governance theory

GVC theory aims to understand the effects of global economic integration on participants in value chains, and how this integration can be managed so that its effects are positive (Gereffi et al., 2001). We define the "value chain" as the set of activities required in the life cycle of a product, from design to final processing after use, including the production, transformation, and delivery of the product to the consumer (Kaplinsky and Morris, 2001). GVC theory was developed in the early 2000s by an international group of researchers seeking to develop a scientific tool capable of capturing the phenomena and dynamics linked to globalization, and more specifically to the process of functional integration of geographically dispersed activities. It tries to contribute to finetuning value chain approaches and go beyond their descriptive character (Kaplinsky and Morris, 2001).

In the scientific literature, GVC governance has been defined and operationalized in three different ways. The first definition considers governance to be the process of *organizing* activities and the division of labor. The focus is on the *drivenness* of value chains, meaning the more or less extensive capacity of certain actors to condition the functional division of labor in a chain. These actors do so by establishing, for example, the quality of the product, the terms of participation and exclusion, bonuses, and so on (Gereffi et al., 2001). In the second definition, governance is considered to be the *coordination* (see the character of linkages) taking place at individual nodes along a chain. Coordination mechanisms relate to the duration of relationships between parties, the repetition of transactions, the frequency of changes in partners, the adaptation of the product or service to the buyer, the specificity of investments, the bilateral dependence between parties, and the importance of their identity (Gereffi et al., 2005). This school of literature is mainly based on transaction cost economics (Williamson, 1991). The third definition sees governance as *normalization*, referring to efforts to realign a given practice to mirror or materialize a standard or norm. Normalization guarantees that the information on a product conforms with the stated definition and the commitments of actors (Ponte, 2009; Ponte and Gibbon, 2005).

In this study, we consider the notion of governance from these three angles and apply this to the analysis of the Senegalese dairy value chain. We use the GVC governance theory to analyze how quality standards and requirements are integrated into value chain organization and inter-actor coordination. It also allows us to observe and describe the power relations within a chain which determine its degree of drivenness. The actors who are the most capable of "driving" the chain are defined as lead firms. These can be buyers, traders, processors, and/or producers defining products, processes, or quality standards.

Convention theory

In this paper, we also explain value chain governance by using convention theory (Boltanski and Thévenot, 1991). This research field began to be developed in the 1980s, particularly in France and the United States. It is intended to be an approach to the problems of economic organization (Marescotti, 2002), and is positioned on the border between microeconomics and sociology. Convention theory is based on the postulate that "the agreement between individuals, even when it is limited to the contract of a commercial exchange, is not possible without a common framework, without a constitutive convention" (Eymard-Duverney 1989 — translation ours). A convention is "a behavioral structure of coordination that offers a resolution process for a recurring problem, by emitting information about identical behaviors of individuals" (Gomez et al. 1994 – translation ours). Quality is a social construction, which "sets the rules of an implicit consensus on what should be the objects exchanged" (id., p. 137). The different concepts of quality represent quality conventions, which intervene in coordination as exogenous to the laws of the market, while strongly structuring it (Sylvander, 1994, p. 34).

A convention appears in a situation of radical uncertainty, where the utility of each actor depends, among other things, on the anticipation of the utility of other actors. It represents "a structure for coordinating behaviors offering a recurring problem-solving procedure, by providing information on the identical behaviors of individuals" (Gomez, 1994 – translation ours). The process of forming conventions is gradual and spontaneous and involves repeated social interactions. Conventions are thus benchmarks and generators of information that simplify decision-making and facilitate coordination between actors. They are constantly subject to evolutionary changes, which arise from changes in worldviews, interrelationships between individuals and their perceptions of the surrounding environment (Marescotti, 2002). Boltanski and Thévenot (1991) identify six different logics or orders

of worth, which represent six different ways of interpreting entities (people, objects, actions, concepts, etc.). These orders of worth are as follows: i) market (based on the principle of price); ii) industrial (efficiency); iii) inspired (creativity); iv) linked to opinion and/or fame (reputation); v) family (esteem); and vi) civic (well-being and collective interest). This list is, however, not exhaustive, and according to the authors other orders of worth can be identified.

Applying convention theory to value chain governance

In the literature, convention theory has been applied to the study of agro-food (mainly international) value chains, and has helped to explain why and how specific inter-actor coordination mechanisms are set up. This school of literature shows that a certain combination of different quality conventions underpins buyer-supplier linkages at a particular time and in a particular context (for a comprehensive literature review on this topic, see Ponte, 2016). Convention theory has been applied to the analysis of the agro-food sector to better explain intangible inter-actor dynamics of power, inequalities, and distribution of value. This also has allowed for the suggestion of alternative coordination mechanisms. It has helped shift the attention of organizational economists from transaction costs, buyer power, market share, and economies of scale to a “pluralistic (and more sociological) understanding of ‘quality’ as a tool structuring production, exchange and consumption” (id. p. 14). Convention theory helps to “situat[e] and analys[e] the dynamics of buyer-seller relations in wider normative contexts. [...] Such contexts provide vocabularies for describing, and prescriptions concerning, what actions buyers should take when governing a value chain and what specific qualities suppliers should aim for and how they should secure them” (Ponte, 2009, p. 237). The assumption is that modes of governance are not only determined by transaction characteristics (Gereffi et al., 2005; Williamson, 1991), but also depend on how lead firms within a value chain refer to some quality conventions and translate (see *normalize*) them into governance mechanisms (Ponte, 2009).

Among the authors in this school of literature, Ponte & Gibbon (2005) show that the trend from hierarchical to activity externalization observed in GVCs does not necessarily mean that value chain governance is becoming looser or that the degree of drivenness is weaker than before. Power is instead expressed and materialized in different ways—one of which is through quality normalization. The authors argue that GVCs are becoming more buyer-driven. Even though buyer-supplier forms of coordination may seem looser, lead firms are able to “embed complex information about quality in standards, labels, certification and codification procedures” (id. p. 3) that underpins their power and legitimacy as “leaders” vis-à-vis their suppliers. Ponte (2009) further deepens this analysis to show how the trend of increasing GVC drivenness is observed when industrial and market conventions dominate, that is, when products are considered as commodities. When other conventions prevail, such as those based on domestic or civic values, value chains are more fragmented and less driven. This is the case of markets involving medium and high-quality products, where product differentiation is key for consumer choice.

This article focuses on *industrial* dairy products that have been processed to remove pathogenic bacteria present in milk (be it through thermization, pasteurization, sterilization or other) and then preserved in airtight packaging. As an entry point for the value chain, we concentrate on dairy processors and their quality strategies, as they are the ones “driving” the chain at the national level. By this we mean defining standards and norms about milk quality and setting up inclusion/exclusion rules. A quality strategy is defined as “the set of information regarding the quality or attributes of a product that firms choose to signal to consumers” (Raynaud et al., 2009 p. 836). These attributes may refer to the product and/or to the production/

transformation processes. A quality strategy is made up of two elements (Raynaud et al., 2005; Raynaud and Valceschini, 2007). The first element is *quality signaling*, meaning the selection of the characteristics to be signaled that could capture consumers’ interest. The second element is the *normalization* of quality, meaning the establishment of systems guaranteeing the credibility of the information reported. In other terms, a quality strategy partially coincides with the governance of a value chain, since it implies the establishment of standards and norms relating to quality.

The figure above synthesizes and simplifies our theoretical framework. Quality conventions, as part of the wider normative context of the value chain, are integrated by dairy processors into their quality strategy and normalized into standards and norms, which determine the coordination mechanisms put in place (for instance the duration of relationships or the adaptation of the product or service to the partner). This has an impact on the degree of drivenness of the value chain. Our specific research question is as follows: *do quality conventions on dairy products drive the governance of the industrial dairy value chain in Senegal?*

Two “dairy basins” as study areas

Our study areas are the regions of Dakar and Kolda. We also interviewed producers in northern Senegal around the town of Richard-Toll since they supply a processor based in Dakar (La Laiterie du Berger). The two study regions have the highest concentration of dairy processing units (processing milk powder and/or local milk) in Senegal. In the Dakar region, there are many units processing milk powder, including the largest in the country, which processes over 10,000 liters per day. To date, these processing units have been the subject of very few studies (Broutin et al. 2007; Desmoulin, 2006). In the Kolda region, the development of the dairy sector was originally driven by research and cooperation programs due to the potential positive impact on the livelihoods of rural households. The oldest dairies were established in the second half of the 1990s.

Data collection was carried out from February 2014 to October 2015. We conducted semi-structured interviews with 23 consumer groups (households, groups of colleagues or friends). Our goal was to identify the criteria that consumers use to select dairy products and to understand the quality conventions that came into play. We also collected information from 202 stakeholders in the dairy value chain (producers, importers, processors, and retailers) through semi-structured

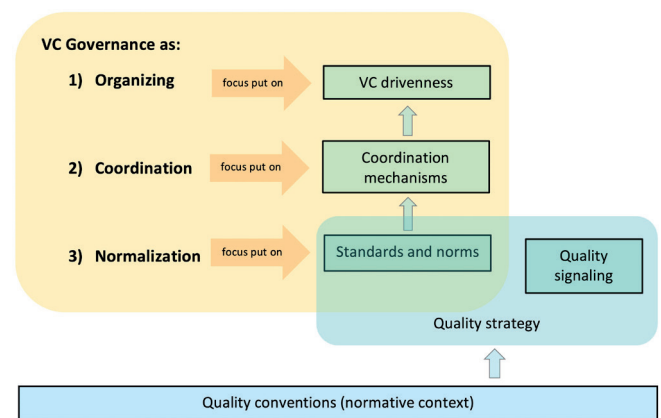


Figure 1: Theoretical framework: the impact of quality conventions on value chain governance (following its three definitions as organizing activities, coordination and normalization) /// *Cadre théorique : l’impact de la convention de qualité sur la gouvernance de la chaîne de valeur (selon ses trois définitions : organisation des activités, coordination et normalisation)*

qualitative interviews to understand their coordination mechanisms, contracts, and power relations. During a first data collection phase, we interviewed all types of value chain actors to obtain an overview of the organization and linkages of the dairy value chain. We decided to focus on the linkages between processors and milk suppliers, since the modes of governance set up at this value chain node can differ widely and offer an interesting spectrum for analysis. During these interviews, we investigated whether and how consumers' quality conventions were being adopted by processors in their relationships with suppliers.

■ RESULTS

We focused on the industrial dairy value chain, which involves the actors linked, either upstream or downstream, to industrial processing units. By "industrial" we mean units that process milk to destroy pathogenic bacteria. This definition takes into account a broad range of processors with diverse processing capacities. We identified 26 processing units in the Dakar and Kolda regions, of which 13 use exclusively imported powdered milk, 5 exclusively local milk, and 8 a combination of the two types of milk. Foreign firms provide the powdered milk, which may be imported by importers or the dairies themselves. The dairies process the milk, which they re-pack in

smaller packaging or transform into other dairy products (liquid milk, yogurts, cheeses, creams, etc.). Local milk is supplied by extensive or intensive livestock farmers. Although there are many farmers, they have limited production capacities. Local milk collection requires a very high level of logistics on the part of processors due to the perishable nature of fresh milk and the specificities of local—mainly extensive—producers. Downstream, products are marketed by wholesale, semi-wholesale and retail actors (for a comprehensive description of the value chain, please refer to Ferrari, 2017).

We were able to identify six milk-related quality conventions in the Senegalese consumer market based on interviews with consumers and the literature (Boltanski and Thévenot, 1991; Sylvander, 1994). The *market convention* is based on product organoleptic characteristics (taste, flavor, color, texture, etc.), the price/quantity ratio, and affordability. The *industrial convention* refers to milk processing techniques, packaging, and standards. The *domestic convention* is based on the "traditional" character of products, as well as their local origin. The *civic convention* is based on the commitment of dairies to engage in development-related activities that benefit the country or specific communities (pastoralists, women, children). The *opinion/fame convention* is based on the product's conformity with "exotic" (mainly European) well-known brand products and standards. The *inspired*

Table 1: Number and types of actors interviewed, and type of information collected /// Nombre et types d'acteurs interrogés, et type d'informations collectées

Class of actors	Type of actor	N°	Information collected
Dairy processing units	Units processing milk powder and local milk	7	Firm history and characteristics
	Units processing (exclusively) local milk	2	Milk supply strategy
	Units processing (exclusively) milk powder into fresh products	3	Marketing and quality strategy Horizontal linkages with competitors
	Units processing (exclusively) milk powder into smaller milk powder packaging	4	Firm perspectives
Local milk producers (interviewed individually or in groups)	Herders of Kolda region	37	Herding practices
	Herders of northern Senegal	35	Level of milk production and income Supply contracts with processors
	Intensive dairy farm in Dakar regionw	1	Horizontal linkages Risks and uncertainty
Importers	Importers/sellers	7	Imported products
	Importers/processors	8	Upstream linkages (suppliers) Downstream linkages (buyers) Perceptions of international supply
Foreign exporters (exporting to Senegal)		3	Exported products Downstream linkages (buyers) Perceptions of the evolution of international and Senegalese markets
Sellers	Sellers	16	Sold products Supply strategy
Consumers	In the city of Dakar (14 focus group interviews)	46	Preferences in terms of dairy products and characteristics
	In the city of Kolda (9 focus group interviews)	32	Use situations Procurement practices Uncertainty about product quality
Others	Secretary of the Interprofession Committee of the Local Milk Value Chain of Kolda (CINAFIL)	1	Overview of the dairy value chain of Kolda
Total		202	

convention appeals to the values held by firms or managers, such as merit, courage, dignity, and morality (for more information about consumers' quality conventions on milk, please see Ferrari, 2021).

Dairy processors incorporate quality conventions into their activity and convert them into coordination mechanisms. Their quality strategy thus reflects their reference to one or several quality conventions, resulting ultimately in specific coordination mechanisms with suppliers. Based on the fieldwork with dairies, and more specifically on the combination of quality conventions integrated into their quality strategy, we developed a typology of quality strategies. Each of the four types identified involves specific modes of governance. Since the focus here is on industrial products, the industrial convention (and the related modes of coordination) is omnipresent in all of the quality strategies. However, some strategies feature this convention more prominently than others.

Strategy 1 – Affordable and modern products

Strategy 1 is based primarily on the industrial convention, emphasizing the guarantee of regular organoleptic characteristics of products, highly controlled industrial processes, and product conformity with international standards. Another key product characteristic embedded in this strategy is related to the market convention, namely the affordability of products and the price/quantity ratio. Senegalese consumers have, on average, low purchasing power and tend to prefer small packages, as this processor explains (all quotes were translated from French, the currency cited is West African CFA):

“This is a 20-gram package. Before we used to make 25-gram packages, but today [since milk prices have increased], if you sell it for 125 CFA, it will not work, you have to keep its price at 100 CFA, so that you have to reduce its quantity”.

Dairies mainly purchase milk powder from multinational companies, and choose their suppliers on the basis of their brand or reputation. Highly reputed milk powder suppliers have strong power, hence Senegalese processors are price-takers, as shown by the quote from a processor:

“Brand X is more expensive than the others, I know. But, in the market, it is the best milk in terms of quality and timely delivery. This is why we do not protest, it is worth to pay a bit more for a better service”.

Nonetheless, the high number of milk powder suppliers in the international market is helping to reduce the power of these actors, since Senegalese processors can choose relatively easily among alternative suppliers, especially when they wish to keep their production costs low. Buyer-supplier contracts often develop over a short period of time and consist of single transactions. These organization modes allow dairies to ensure regular supply and conformity of products with industrial standards while providing affordable products to the local market.

Strategy 2: Connecting local producers to the formal market

This strategy emphasizes the contribution of processors to the country's development through the inclusion of local family farmers (pastoralist households) in the national market. Under this strategy, the civic quality convention is dominant and represents the dairies' *raison d'être*. Processors commit to collecting milk that is produced locally, mainly by extensive herding systems. The underlying hypothesis is that pastoralists have limited access to markets and their milk production needs to be increased and used. Dairies are thus not only responsible for buying milk from local pastoralists, but also for empowering them. This can be achieved by providing technical advice to pastoralists on herding techniques and farm management. Since milk is collected locally, processors also base their

quality strategy on a domestic convention and emphasize the local identity of their products. A very clear example of this combination of domestic and civic values is shown in Figure 22. The picture shows a calabash, a traditional bowl used by herders, containing milk. The slogan “Good for me, good for my country” (“*Bon pour moi, bon pour mon pays*” in French) makes clear that the milk is contributing to the social/economic development of the country.



Figure 2: Logo of a dairy unit collecting milk in the silvopastoral area of northern Senegal // Logo d'une unité laitière collectant du lait dans la zone sylvopastorale du Nord du Sénégal

In line with their quality strategy, processors establish more or less formalized contracts with producers that cover not only milk supply, but also the bundle of services offered by dairies. Among these, animal feed supply is key in the contractual agreements. Processors provide small amounts of credit to producers that will be gradually repaid through their supply of milk. This allows producers to buy animal feed and look after their herds during the dry season, ensuring regular income throughout the year. Another coordination mechanism supporting normalization consists in encouraging and supporting the creation of producer organizations/cooperatives and value chain-level cooperation frameworks, where different actors can discuss sensitive issues and search for common solutions. Such forms of organization build a weakly driven value chain, since power is negotiated and more or less distributed at different nodes. Nonetheless, as local herding farms are relatively small and scattered over vast areas, the size and competencies of processors tip the balance in their favor.

Strategy 3 – Partnership with farmers in rural areas

This quality strategy is quite similar to Strategy 2, but differs with regard to the reasons why the dairies are created. Strategy 3 is mainly characterized by a domestic convention, on which the industrial convention lies. Processors are motivated by the desire to give value to local tradition and products while endowing these products with a “modern” appearance and safety standards and procedures. They have strong attachments to local communities, from which they may come. Under this quality strategy, products are usually given names in local languages that reflect tradition and reveal the domestic convention. This is illustrated in this quote from a processor:

“I said to [those producers], the milk you deliver to me, I really care about it, because in my logo I wrote “Kosam Na'i Fuladu” [“milk of cows of the Fuladu region” in the Fula language], so I work with local milk”.

The coordination mechanisms allowing normalization under this strategy consist of informal contracts with local herders. Although

both parties are free to change partners, these processor-supplier relations usually develop over a long period of time, especially since they often represent the extension of prior social relations. They may be considered as “relational incentive contracts”, that are “agreements for which the ongoing relationship between the parties plays an essential role in determining what happens” (Malcomson, in Gibbons and Roberts, 2013). They are self-enforcing, since the intervention of third parties is not required for them to be respected.

The relational aspect of these contracts makes it possible to have a relatively fair distribution of power between the two types of actors. While processors can establish quality requirements to be respected by their suppliers, producers can impose rules, for instance regarding payment or services, and eventually change their buyer if they are not satisfied. This can be understood from a producer's speech below:

“We have chosen dairy X because it is among the best ones, which pay regularly. Before we used to work with dairy Y, but it had some problems and did not pay us for three months. We decided to quit and change. We also tried to work with other dairies, but there were always issues, like when they could not buy all the milk you deliver, or when we provided them with our milk and the day after they said our milk had turned and refused to pay”.

In addition to the domestic convention, processors adopting quality Strategy 3 use the industrial convention through product safety standards. Besides being equipped with specialized equipment and staff, they also require their suppliers to comply with hygiene standards and norms regarding the production, transport and storage of milk, as shown by the following quote from a processor:

“When you [the producer] deliver your milk churn, I tell you: Here you have soap, bleach, and water. Wash the churn in front of me. If it is clean, I add some bleach. Tomorrow you will rinse, heat some water, and so on, before putting the milk inside. Otherwise the milk will turn.”

By doing so, they contribute to the process of professionalizing local herders as milk producers. That is how the civic convention also threads its way through this quality strategy.

Strategy 4 – The guarantee of foreign brands dedicated to development

This type of quality strategy relies on the opinion/fame convention and is mainly based on the use of strict contracts with international brands, such as franchises. Brands that are considered ‘foreign’ or ‘exotic’ offer a guarantee of product safety and professionalism. The information conveyed is based on an “intrinsic value” and the prestige of the brands, which make the products desirable. For instance, on the website of the Senegalese company marketing milk under the French brand *Candia*, it is emphasized:

“Recognized and labeled in many countries, Candia is the leading European milk brand with 1.5 million liters marketed.”

Processors adopting this quality strategy also may commit themselves to collecting local milk as a development-oriented activity, thus embracing a civic convention. However, development goals are less crucial here than in Strategy 2, so the effectiveness and contextualization of the governance modes set up to normalize the civic convention are weaker. The arrangements between these processors and their suppliers are mainly based on the price and quantity of milk to be supplied; the bundle of supplementary services enabling local producers' empowerment is not present. In other words, the processors implementing this quality strategy are less devoted to figuring out and setting up incentives and support for local herders, and are consequently less likely to contribute to the development of the local milk value chain.

Under this quality strategy, processors are weak actors vis-à-vis their international suppliers who have much more power due to their

reputation. However, they are more powerful than their local milk suppliers since they occupy what is almost a monopolistic trading position. In most areas, there is only one industrial actor collecting milk from local producers.

■ DISCUSSION

Our case studies show how dairy processors are able to take into account quality conventions that apply in consumer markets, and normalize and translate these conventions into processes and coordination mechanisms. Figure 3 shows, for each of the quality strategies, the dominant conventions that processors seize from their institutional environment (society), feature through their marketing communications, and normalize through adapted coordination mechanisms. We argue that quality conventions regarding milk and dairy products drive the governance of the industrial dairy value chain in Senegal since information about consumer expectations and preferences is translated into specific processor-producer modes of governance. Strategy 1 aims to meet the demand for affordable industrial products, especially in urban areas. This translates into a reliance on powdered milk supplied by international companies and a constant search for lower prices. Strategy 2 addresses consumers' demand for “fair” products, with the aim to contribute to the development of underprivileged sections of the population, such as pastoralists. Processors try to offer pastoralists market opportunities and other services to support them. Strategy 3 responds to consumers' desire for safe products, while highlighting tradition and local values. Processors achieve this by establishing partnerships with local producers, mainly in rural areas around secondary cities. Strategy 4 incorporates the preference for international reputation-based guarantees. This is normalized through close linkages with multinationals or well-known foreign powdered milk suppliers, even though some local development initiatives may be implemented.

It is particularly interestingly to observe that there is an overlap between Strategy 2 and Strategy 3, both of which aim to give (market) value to local milk and support local producers. For the sake of simplicity, we can define Strategy 2 as top-down, i.e., initiatives are driven by broader national level development goals and ultimately lead to working with local producers. In contrast, Strategy 3 is a bottom-up approach, stemming from the proximity between processors and producers and driven by common development goals. In both cases, power within the value chain is relatively fairly distributed between the processing and production levels. Although processors have stronger capacity and power, producers benefit from increased ability to “drive” the chain through processors' development aims and/or the relational component of buyer-supplier linkages. Under these quality strategies, processors tend to set up incentives and facilities vis-à-vis suppliers (e.g., credit for animal feed during the dry season) to ensure that their *milk supply* is regular. By doing so, they also help to make *milk production* regular; translated into economic terms, *producers' income* becomes more regular too. Income stability contributes to reducing household vulnerability, since households can anticipate their earnings and spending. Under this framework, dairies play the role of microfinance institutions, allowing producers to save part of their earnings and providing small grants when needed. For producers, this represents a form of “self-insurance”, enabling them to avoid taking on debt when they require large sums for family celebrations or to cope with social and environmental shocks. It also encourages the emergence of responsible behaviors among producers, who can better plan their activities and make investments in productive assets (such as dairy cattle).

Table II summarizes the characteristics of each of the four quality strategies identified, namely the quality conventions on which there are

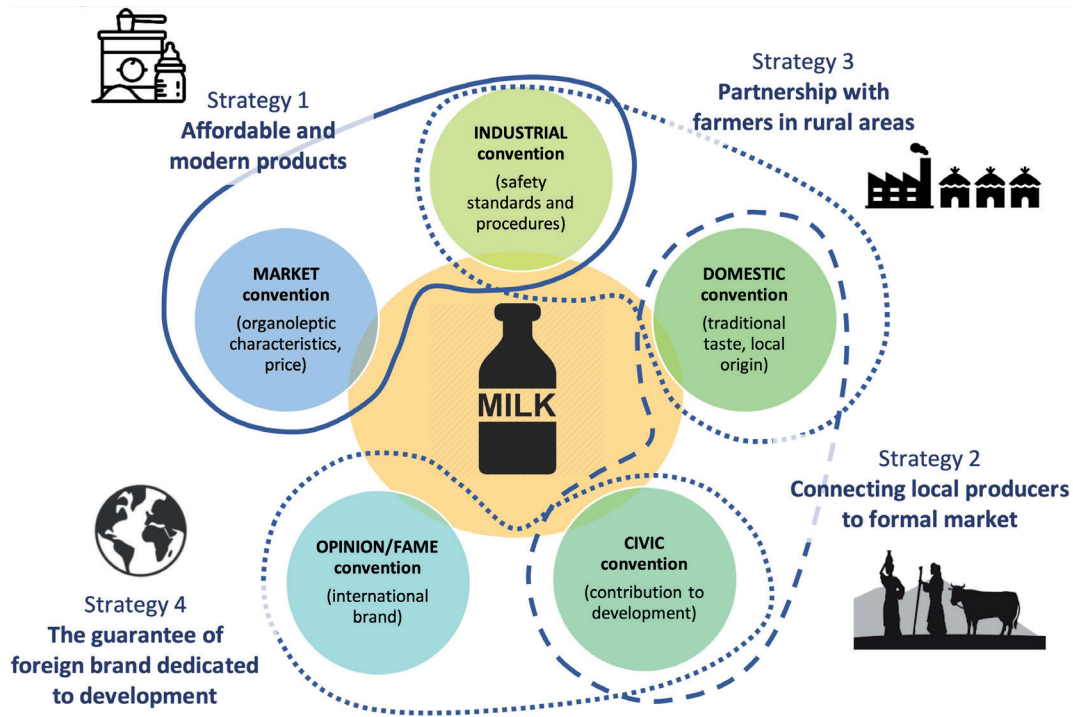


Figure 3: Quality conventions and strategies in the industrial dairy value chain of Senegal // Conventions de qualité et stratégies dans la chaîne de valeur des produits laitiers industriels au Sénégal

Table II: Quality conventions, signaling, coordination mechanisms and value chain drivenness following the four quality strategies // Conventions de qualité, signalisation, mécanismes de coordination et orientation de la chaîne de valeur selon les quatre stratégies de qualité

Strategy	Quality conventions (consumer market)	Quality signaling (by processors)	Standard and norms (by processors)	Coordination mechanisms between processors and suppliers	Value chain drivenness
1/ Affordable and modern products	Industrial	Product regularity; industrial packaging	Regular organoleptic characteristics, controlled industrial processes	Purchasing from multinational companies based on their reputation	<i>Upstream driver</i> Strong power of milk powder suppliers (multinationals), mitigated by their large number (processors can change partners). Processors are price-takers.
	Market	Price	Affordability	Short-term and not binding arrangements with powdered milk suppliers	
2/ Connecting local producers to the formal market	Domestic	Local origin of milk	Buying milk from local producers	Arrangements with local producers	<i>Weakly driven value chain</i> Power is negotiated and distributed between producers and suppliers. Thanks to their size and competencies, processors are slightly advantaged.
	Civic	Development-oriented business model	Ensuring producers' empowerment	Bundle of services offered by processors in favor of local milk producers	
3/ Partnership with farmers in rural areas	Industrial	Product regularity; industrial packaging	Regular organoleptic characteristics, controlled industrial processes	Specialized equipment and staff; requirement specifications established by processors in terms of milk hygiene	<i>Relatively fair distribution of power between processors and producers</i> Processors establish quality requirements. Producers may impose rules and eventually change their buyer.
	Domestic	Local origin of milk	Buying milk from local producers	Arrangements with local producers ("relational incentive contracts")	
4/ The guarantee of foreign brand dedicated to development	Opinion / fame	International brands	Buying milk from highly renowned international companies	Tight contracts with international brands (e.g., franchise)	<i>Varying power of processors depending on suppliers</i> Processors have less power than international milk powder suppliers (multinationals), but more power than local suppliers, (monopolistic trading position).
	Civic	Development-oriented business model	Buying milk from local producers	Arrangements with local suppliers in terms of prices and quantities	

based, the standards and norms established, the coordination mechanisms put in place between processors and suppliers, and the level of value chain drivenness these strategies lead to. This study highlights the indirect power that downstream actors have on upstream actors, through the strategy (normalization) of an intermediate segment of the chain (processors). This confirms the conclusion of Ponte & Gibbon (2005) that value chains are becoming more buyer-driven, even though buyer-supplier coordination mechanisms may seem looser. At the same time, as Ponte (2009) has observed, this is true when industrial and market conventions prevail, whereas other quality conventions, such as the civic and domestic ones, give birth to less driven value chains.

■ CONCLUSION

This study shows that quality conventions influence and shape the governance of the dairy value chain in Senegal. The way that leads firms normalize consumer expectations gives birth to specific modes of governance in buyer-supplier relationships. Some combinations of quality strategies and modes of governance are better suited to contributing to the sustainability of the local milk value chain in terms of social and economic development. Processors adopting Strategy 2 (“Connecting local producers to the formal market”) and Strategy 3 (“Partnership with farmers in rural areas”) are in particular ensuring the sustainability of the value chain. They are able to cater to consumer preferences for fair and local milk-based products, differentiating themselves from other more “conventional” products (those made exclusively from powdered milk) while offering the guarantee of food safety processes. In addition, the coordination mechanisms aimed at normalizing these quality strategies finance local production and ensure its sustainability by improving producers’ capacity and market opportunities.

The long-term sustainability of these processors will depend on their ability to embrace and normalize other quality conventions, in particular those related to market principles and reputation. In other words, they need to find solutions to be competitive in terms of price to reach large sections of the population with low purchasing power. This might be achieved by not only reducing production costs, but also by negotiating with the State or other actors to establish new taxing or pricing systems aimed at favoring local milk instead of milk powder imports. They also need to invest in building strong brand reputations by improving their food safety standards (when defective), highlighting the origin of their raw material and their commitment to development, and carrying out individual or joint marketing campaigns.

An innovative aspect of this study, and of the body of literature to which it contributes, consists in considering value chains not as independent entities, but in relation with their environment and more specifically with institutions defining product quality, including the cultural and social context. One limitation of this paper concerns the small number of dairy processors considered in our study areas (16). More empirical work, for example in other regions/countries, would be required to scale up our conclusions and update our results to identify more recent trends. It also would be interesting to analyze the origins of quality conventions and the pressures from stakeholder and/or society dynamics that led to their development.

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Conflicts of interest

The authors declare that there is no conflict of interest.

Author contributions

SF: design of the study; collection of data; data analysis and interpretation; drafting of the first version of the manuscript; GD, CC and DD: critical review of the manuscript.

Ethics approval and informed consent

The ethics protocol in social sciences respected the principles and good practices proposed by Van Campenhoudt et al. (2022). During data collection, respondents were informed of the objectives of the study and of respect for anonymity and were given the opportunity to explicitly give their consent to continue the interview.

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Résumé

Ferrari S., Duteurtre G., Corniaux C., Dia D. Comment les conventions de qualité déterminent la gouvernance des filières lait du Sénégal

Au cours des dernières décennies, le secteur laitier sénégalais a connu une transformation rapide. Les habitudes alimentaires des consommateurs urbains ont évolué vers une demande accrue de produits laitiers avec de nouvelles exigences de qualité. Cet article examine comment les conventions de qualité influencent la gouvernance des chaînes de valeur laitières au Sénégal. Nous affirmons que la gouvernance d'une chaîne de valeur n'est pas seulement déterminée par les caractéristiques des transactions, mais également par la manière dont les « entreprises leaders » intègrent différentes conventions de qualité et les traduisent en mécanismes de gouvernance. Grâce à des entretiens semi-structurés auprès des consommateurs et des parties prenantes de la chaîne de valeur lait (producteurs, importateurs, transformateurs et détaillants), nous avons collecté des informations sur les critères de sélection des consommateurs pour les produits laitiers et les stratégies de qualité des transformateurs, ainsi que sur les mécanismes de coordination, les contrats et les relations de pouvoir au sein de la chaîne de valeur. Nos résultats montrent que la manière dont les entreprises leaders normalisent les attentes des consommateurs conduit à des mécanismes organisationnels spécifiques dans les relations acheteur-fournisseur. Certaines combinaisons de stratégies de qualité et de mécanismes de gouvernance sont mieux adaptées pour favoriser la durabilité de la chaîne de valeur du lait local en termes de développement social et économique. Les transformateurs qui établissent des relations viables avec les producteurs de lait garantissent notamment la durabilité de la chaîne de valeur, car ils sont en mesure de répondre aux préférences des consommateurs pour des produits à base de lait équitables et locaux, tout en offrant la garantie de processus de sécurité des aliments. Notre étude met en évidence le pouvoir indirect que les acteurs en aval (les consommateurs) exercent sur les acteurs en amont (les producteurs) via des stratégies (normalisation) mises en œuvre par des acteurs opérant dans un segment intermédiaire de la chaîne (les transformateurs). Cela montre que les consommateurs, à travers leurs préférences d'achat, jouent un rôle clé dans le développement du secteur de l'élevage local.

Mots-clés : Lait, gouvernance des chaînes de valeur, label de qualité, convention, industrie laitière, Sénégal

Resumen

Ferrari S., Duteurtre G., Corniaux C., Dia D. Cómo los acuerdos de calidad determinan la gobernanza de los sectores lácteos del Senegal

A lo largo de los últimos decenios, el sector lechero senegalés ha experimentado una rápida transformación. Los hábitos alimentarios de los consumidores urbanos han evolucionado hacia un incremento en la demanda de productos lácteos con nuevas exigencias de calidad. Este artículo examina cómo los acuerdos de calidad influyen en la gobernanza de las cadenas de valor lecheras en el Senegal. Afirmamos que la gobernanza de una cadena de valor no está determinada solamente por las características de las transacciones, sino también por la forma en que las «empresas líderes» integran diferentes acuerdos de calidad y los traducen en mecanismos de gobernanza. Mediante entrevistas semiestructuradas a consumidores y a partes implicadas en la cadena de valor de la leche (productores, importadores, transformadores y minoristas), recopilamos información sobre los criterios de selección de los consumidores para los productos lecheros y las estrategias de calidad de los transformadores, así como sobre los mecanismos de coordinación, los contratos y las relaciones de poder en el seno de la cadena de valor. Nuestros resultados muestran que la forma en que las empresas líderes normalizan las expectativas de los consumidores conduce a mecanismos organizativos específicos en las relaciones comprador-proveedor. Determinadas combinaciones de estrategias de calidad y de mecanismos de gobernanza están mejor adaptadas para favorecer la durabilidad de la cadena de valor de la leche local en términos de desarrollo social y económico. Los transformadores que establecen relaciones viables con los productores de leche garantizan especialmente la durabilidad de la cadena de valor, porque están en condiciones de responder a las preferencias de los consumidores por los productos a base de leche de comercio justo y locales, que ofrecen una garantía de procesos de seguridad alimentaria. Nuestro estudio pone en evidencia el poder indirecto que los actores aguas abajo (los consumidores) ejercen sobre los actores aguas arriba (los productores) mediante las estrategias (normalización) aplicadas por actores que operan en un segmento intermedio de la cadena (los transformadores). Ello demuestra que los consumidores, a través de sus preferencias de compra, juegan un papel clave en el desarrollo del sector ganadero local.

Palabras clave: Leche, gobernanza de la cadena de valor, sello de calidad, convenios, industria lechera, Senegal

