

## MOROCCAN CANNED SARDINES VALUE CHAIN-GOVERNANCE AND VALUE ADDED DISTRIBUTION

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**ABSTRACT:** *Morocco is the world's leading producer and exporter of canned sardines. However, this product value chain encounters multiple challenges. This study explores how such a chain could create and capture a larger value added share within the European market. Surveys using questionnaires and open interviews have been carried out including a sample of relevant actors in the chain. The results show that the value chain is substantially driven by European retailers who create 68% of the total value added; while Moroccan canning industry remains relatively less wealth-building and captures less income. The improvement strategy should foster better vertical cooperation among actors, a common commercial policy and an innovative diversification of the Moroccan offer.*

**KEYWORDS:** Canned sardines, Value chain, Value added, Governance, Income, Morocco

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### INTRODUCTION

#### Morocco, global leadership for canned sardines

According to FAO fish capture statistics, world small pelagics production reached 23.7 million t in 2012, which represent more than 25% of the total capture production (91,3 million t) (FAO, 2014). These catches are dominated by anchovies (7.6 million t), mackerels (3.5 million t), sardines and sardinellas (3.4 million t). With 1.17 million t, Morocco holds the 18th position in the ranking of the major producers of capture fish (FAO, 2014). Small pelagics are its main fishery resource with almost 88% of national fisheries production (Department of Marine Fisheries, 2013). Small pelagics offer is dominated by a single species: the so-called European sardine (*Sardina pilchardus* Walbaum), for which Morocco has the largest stock in the world. Indeed, at international level, the European sardine production was 1.019 million t in 2012 (FAO, 2014). Morocco contributed by 65%, followed by Spain.

In Morocco, the growth of small pelagics processing industry is the result of a long process of know-how capitalization. This industry plays an important economic and social role. In 2013, it consisted of 47 processing plants with an annual processing capacity of 300,000 t of raw material and generated some 21,000 full-time and seasonal jobs. Small pelagics canning industry focuses primarily on sardine (86%) followed by mackerel (13%) (Department of Marine Fisheries, 2013). With regard to international trade, Morocco is by far the largest exporter of canned sardines, with an annual export of US \$ 442 million in 2013 (Department of Marine Fisheries, 2013). Most Moroccan exports go to EU and African markets.

#### Research problem

The use of value chain (VC) as a framework for analyzing the fishing and processing activities is relatively new in the Moroccan context. The current debate focuses on how to better increase the returns of the raw materials and to ensure fair distribution of the gains generated by the fisheries, especially those export-oriented activities. Studies tackling specifically canned

sardines VCs are lacking. Gudmundsson *and al.* (2006) have worked on the semi preserved anchovy VC in Morocco and have found that the value added (VA) is unevenly distributed among the main actors in the VC. The added value thus created is captured by final segments, namely that of distributors located outside Morocco.

Pelagic commodity chain (CC) plays a crucial role in Morocco's food security, in the labour market, trade balance as well as in private investment. The sardines canning export sector offers a great development potential. However, fish value addition in Morocco deserves to be optimized throughout the entire VC. Indeed, development prospects of pelagic commodity chain should overcome numerous constraints. This sector suffers from: i) a lack of quality raw material supply; ii) a relative loss in competitiveness; iii) a decline in its competitive position in some global markets; and iv) difficulties in responding to the changing global demand and consumer preferences. These factors are both the causes and the results of the fact that high proportion of sardine production is destined to less value generating industries. The latter absorbs annually between 30 and 40% of domestic production for this species (DMF, 2013). Hence, the next question that needs to be answered is: “how Morocco can create and capture a bigger share of value added in the canned sardines global value chain?”.

### **Objectives of the study**

Over the past years, analysis and performance benchmarking of small pelagics CC have used a sectorial approach that addresses each link separately: fishing, processing industry and marketing. Indeed, these links are managed by various entities. This situation generates different development policies that are fragmented and lack integration.

The purpose of this study is to analyze both production and marketing of canned sardines using VC method. This approach aims, among others, at quantifying the creation of VA and examining its distribution among the different actors within the chain. For the authorities in charge of fisheries, this work should serve as a useful tool for decision-making with a view to developing, adjusting and strengthening the seafood industry development policies. For the business sector, the study will put forth measures likely to strengthen their capacities to generate VA and improve their competitiveness. For the authorities in charge of fisheries, this work should serve as a useful tool for decision-making in order to develop, adjust and to strengthen the seafood industry development policies. For the private sector, the study comes up with measures likely to strengthen their capacities to generate VA and to improve their competitiveness in the teeth of international competition.

### **LITERATURE**

Value chain describes the full range of activities required to bring a product or a service from conception until delivery to the final consumer (Kaplinsky and Morris, 2001). The concept of VC could be considered in the narrow sense or the broad one. In a narrow sense, VC refers to all activities within a firm (Porter, 1985). The broad one, however, is interested in the participation of the various agents (firms or others) in an external or global VC (Gereffi *and al.*, 1994). The global value chain (GVC) places the commodity chain within world trade. It highlights the weight of hierarchical relationships in VCs analysis.

The VC analysis focuses on identifying all the economic costs along the chain to determine where and how much value is added, also the relative importance of the various agents in connection with the formal and informal governance structure (Gereffi *and al.*, 1994). Value chain thus helps to understand the distribution of benefits derived from the various activities within the chain. However, the distribution of benefits has both "power" and "income" components. The first component reflects the balance of leverage that the various stakeholders use in determining who does what in the chain, while the second concerns the returns accruing to each party (Kaplinsky and Morris, 2001).

Since VCs involve repetitiveness of linkage interactions between agents, governance could be considered a reflection of the way activities are organized in the VC (Kaplinsky and Morris, 2001). This organization is governed by rules and regulations that are set up by the actors operating within the chains or by those who are outside such as government, NGOs and the ISO Organization. Humphrey (2001) describes governance as the definition and enforcement of instructions relating to what products are to be produced (product design), how they are to be produced (process controls) and when (timing) they must be produced

Relationships holding between the actors are not only characterized by transactions, but also by a comprehensive information exchange concerning information, knowledge, skills and various integrated services (e.g. loans provided from input suppliers to small producers, marketing support, etc.). Furthermore, these relationships among agents can range from very dependent, where one party dominates, to balanced, where all parties have some power they can exercise and share. Gereffi (1994) made a distinction between two types of VCs: "*Buyer-driven chains*" and "*Producer-driven chains*".

In Morocco, the sardine commodity chain includes several VCs depending on the nature of the product and its end market. Thus, the commodity chain is regarded as consisting of "a series of operations or transformations, a set of agents and a system of markets (in terms of both physical flows and their monetary equivalents), as well as the behavior of agents as guided by their economic interests" (Tallec, F. and Bockel, L., 2005a).

## METHODOLOGY

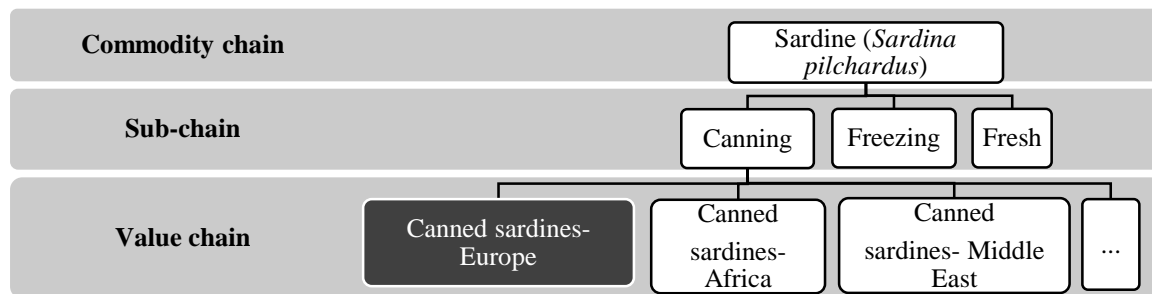
The analysis of the VC of canned sardines aims to provide an overall comprehensive overview of: i) economic agents involved in the chain and their strategies; ii) product and financial flows that run through the chain; iii) modalities for the creation and distribution of the value among the different agents; and iv) the organization of the VC and its governance pattern. To collect information used in VC financial and efficiency analysis, production-trading accounts have been developed for each type of agent. The procedure was subsequently extended to cover the preparation of consolidated accounts for the entire VC.

Two related concepts are crucial to VC overall efficiency analysis: created VA and distributed income. Thus, the analysis of the efficiency aims at: i) assessing the amount of VA for the chain as a whole; ii) determining how the VA is created by the chain and by which agents; and iii) determining how income is distributed, that is to say, how the agents are paid for their participation in the chain activities (Tallec and Bockel, 2005b).

The obtained results enable to assess the impact of VC on each agent (operating profits), on growth (overall VA created) and on the distribution of income by category of agent (Tallec and Bockel, 2005b).

### Selection of value chains

As pointed out earlier, the sardine commodity chain (defined on the basis of the *Sardina pilchardus* species) encompasses several VCs that stand out on the basis of the product (sardine preparation) and end market. Thus, the sardine commodity chain covers three main sub-sectors: sardine canning, sardine freezing and fresh sardines. The canning industry consists of several VCs depending on the type of preparation and the recipient market (Figure 1). For the purposes of this study, the VC of canned sardines intended for the European market was selected.



**Figure 1. Sardine-based value chains in Morocco**

Selected VC includes two main variants that have been taken into account in the calculation and analysis: whole round canned sardines and "skinless & boneless" canned sardines in vegetable oil.

### Survey of value chain agents

The survey was conducted between 2010 and 2011. It started with the selection of the most relevant VC variants and continued with the typology of agents, sampling, design of data collection tools, field surveys and data processing.

*Typology of agents:* Four categories of agents have been identified: fishing units, intermediaries (collectors and wholesalers), processing units and distributors.

*Sampling Method:* To collect quantitative and qualitative data needed for analysis, field investigations with key actors were conducted. They were determined based on questionnaire surveys and open interviews. The work of Kamili (2006) was used to provide financial data on purse seiners that exploit small pelagics stocks in Moroccan waters. Parameters relating to production volumes, landed fish prices and fuel prices have been updated, while cost structure has been maintained. For the industrial segment, surveys covered a sample of five units from a total of 42, i.e a sampling rate of 12%. Selected units were located in the most important centers for sardine processing in Morocco: Safi and Agadir. For wholesale raw material fish supplies, a sample was selected from those who supply the selected processing units. As for the distribution agents (active in the European market), information was gathered from different national and international sources involved in the distribution.

*Data analysis:* Data collected from various agents of the VC were used to elaborate the production-operating account of each agent. Then, all these accounts were consolidated into a single account for the overall VC. Alongside with accounts preparation, structures and modes of governance were examined to characterize the relationships and interactions between

different agents. Emphasis was put on the stakeholders who play a leading role within the VC (power relationship).

## RESULTS

### Canned sardines VC pattern of organization

Sardine fishery supply many VCs. Fresh fish domestic market consumption absorbs, annually, about 110,000 t of sardines. The freezing industry annually processes about 130,000 t used to supply the local industry as well as the foreign market. The fishmeal and fish oil industry is another outlet that supplies the domestic and foreign markets (220,000 t in 2012). Finally, the canning industry is by far the most economically important segment. In 2013, it absorbed 240,000 t of raw materials.

Canned sardines production line in Morocco covers the following types of products: i) whole round sardine in vegetable oil; ii) whole round sardine in tomato sauce and other ingredients; iii) skinless & boneless sardine in vegetable oil; and iv) other preparations (balls or sliced fragments in oil or tomato,...). Sardine is marketed under various brands. The latter represent an important marketing asset especially for historical brands benefiting over the years from a strong positioning among consumers. Canned sardines are delivered in both lithographed and white boxes with or without hand packs.

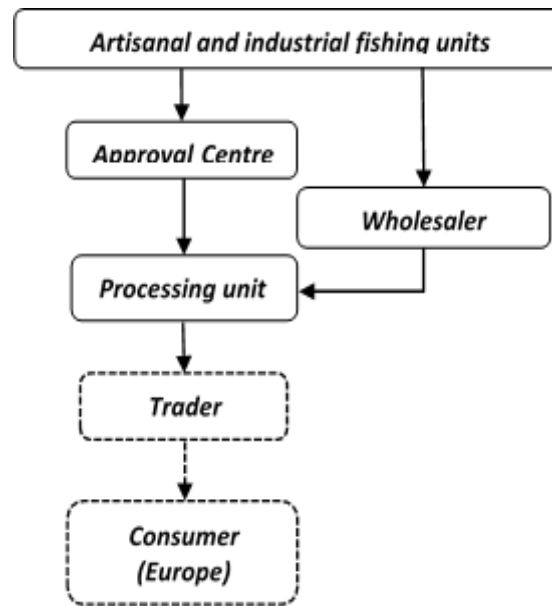
### Value chain actors

Canned sardines VC actors can be classified into four broad categories (Figure 2): sardine fishing units, intermediaries, processing units, and distributors.

*Fishing units:* Fishing is the first link in sardine commodity chain. The fishing fleet is broken down into two categories: a modern industrial fleet, very much smaller and more efficient, and an artisanal fleet (so-called coastal), which holds a dominant position but suffers major handicaps. The latter category of vessels is quite old. The on-board facilities for fish preservation are not appropriate. Also, coastal fishing units target more quantity before quality. The surplus ends very often at fish meal and fish oil factories.

*Wholesalers:* Intermediaries intervene as the second link in the VC. They play a key role in the supply of processing plants with raw material, especially when the industry doesn't supply itself. The selected wholesalers are active in the Central and Southern fishing harbors of Morocco.

*Processing units:* Canneries are still the most important industrial sub sector of fish processing industry. In 2013, it used 240,000 t of raw material, consisting primarily of sardines, and created 50% of employment (DMF, 2013). *Distributors:* The VC, the purpose of this study, primarily targets the European market. Distributors who are active in this market include in their activities partly or entirely import, distribution, and retailing. These distributors are very often large companies with a network of supermarkets covering several countries.



**Figure 2. Actors and organization of canned sardines value chain**

### Value chain governance

Value chain governance refers to how the VC is organized or coordinated. Canned sardines VC has generally the features of an "directed *network*". There are a limited number of distributors who absorb almost all of the production. In addition, the final customer defines the characteristics of the product in terms of raw material used, preparations, sanitary standards, etc. Relationships between canned sardines VC actors are marked by arrangements and agreements which are primarily intended to secure supplies and negotiate stable prices on favorable terms. The wholesaler consolidates his position as a broker operating between the fishing fleet and the processing plant, by providing advantages that fishing owner cannot offer: *i.g.* delivery to the processing plant and granting of payment facilities. Since the wholesaler's sales margin is stable, he has almost no impact on the price change in the VC.

In the European market, distributors generally undertake themselves retail distribution activities through a network of supermarkets all over Europe. There is a trend among distributors to market their products under their own trademarks, which contributes in facilitating the promotion of such products. Distributors hold effective control over the canned sardines VC. Also, their price offer, however, does not only depend on the state of the canned sardines market (level of demand and impact of competition), but also on their position and their role in this VC. Distributors often use sales contracts, concluded with Moroccan processing units, and communicate to manufacturers, in advance, the quantities of final products, types of preparation, type of packaging and timeframe for delivery. Distributors may also attempt to take advantage of competition and substitutes in order to negotiate further benefits. Distributors' procurement strategy varies on a case-by-case basis. If the product has been FOB purchased, the latter may bear the processing unit trademark and / or the brand of the distributor. According to the Moroccan manufacturers, private labels are experiencing sustained growth, particularly in the European market. In this case, the processing units provide the commonly labeled "filling" function.



Canned sardines price fluctuations, which are noted in the European market, are directly passed on to the processing units. Intermediaries and fishing units are immune (at least in the short term) because of raw material price rigidity due to the pricing mechanism. Because of the small size of canned sardines companies and the lack of a marketing consortium, processing units don't allow to counterbalance the distributors' power or to improve their position in the VC. On the other hand, processing units attempt to comply with sanitary and environmental standards (Eco label, etc.) required by specific markets in order to strengthen their positioning and their differentiation policy. The processing units marketing strategy is based primarily on order contracts. Each processor tries to get orders covering its production capacity and mainly including the most profitable and most structured market (e.g. the EU market). For other markets, including Africa and Asia, processing units are usually approached by trading companies that support product marketing and distribution. Producing under orders and the relatively long shelf life of the final product allow processing units to optimize their production and to better manage the seasonal effect and the irregular raw material supplies. Given the irregular and unpredictable landings of the fishing fleet, some industrial units are forced to call on freezing units to secure they supplies by frozen sardine, whole or headless, gutted and tail-off.

### Creation and distribution of VA: the distributors' domination

Production-trading accounts were produced for each VC actor based on one ton of raw material. Then, these individual accounts were aggregated into a consolidated account of the entire VC. As regards the creation of VA, distributors (located in the European market) have achieved the best performance with a VA ratio of 44% (Table 1). This is due to the level of consumer prices, which are more than the double of the processing plant price. In contrast, domestic wholesaling is the activity that creates less wealth (4%). Intermediate inputs consumption is weighed down with raw material cost. In addition, wholesalers target turnover business strategy rather than revenue-based one. In the overall, the consolidated canned sardine VC generates a ratio of 39%. Two main conclusions can be drawn: i) a large portion of the VA is created outside of Morocco; ii) processing industry does not generate enough wealth.

**Table 1. Production-trading account of agents and of canned sardines consolidated VC (in MAD<sup>(1)</sup>/t live-weight equivalent of sardine)**

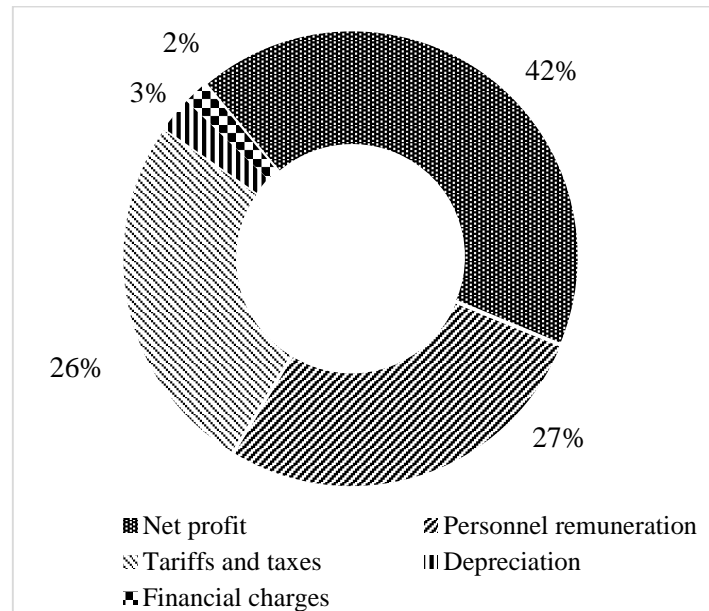
	Fishing unit	wholesaler	Processing unit	Distributor	Consolidated VC
<b>Turnover</b>	2,400	2,900	13,321	29,063	<b>47,684</b>
<b>Intermediate inputs</b>	280	2,779	9,586	16,369	<b>29,014</b>
<b>Value added</b>	2,120	121	3,734	12,695	<b>18,670</b>
Personnel remuneration	996	14	918	3,197	<b>5,125</b>
Financial charges	47	0	50	224	<b>321</b>
Tariffs and taxes	392	15	409	4,036	<b>4,852</b>
Depreciation	109	0	67	291	<b>467</b>
Net profit	576	92	2,291	4,947	<b>7,906</b>
<b>Value added ratio <sup>(2)</sup></b>	88%	4%	28%	44%	<b>39%</b>
<b>Profitability ratio <sup>(3)</sup></b>	32%	3%	21%	20%	<b>18%</b>

(1) One Moroccan dirham (MAD) is equivalent to about \$ 0.11.

(2) Value added ratio: Value added/Turnover

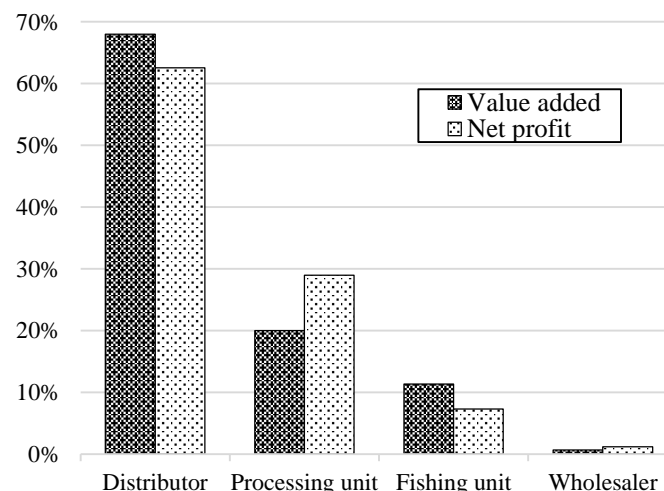
(3) Profitability: Net profit /Total costs

As for financial efficiency, VC registers, in general, a good performance with a rate of return estimated at 18%. This ratio shows differences depending on the type of actor, with a maximum for fishing units and a minimum for fish wholesaling companies. The VA created in the canned sardines VC is distributed predominantly (95%) as: i) net profits to remunerate the various agents (companies) of the VC; ii) wages to pay for the labour force; and iii) tariffs and taxes including profit tax (Figure 3).



**Figure 3. Value Added distribution at the Moroccan canned sardines value chain**

The analysis of VC agents' contribution to the creation of the total VA revealed that the quantity of canned sardine produced from 1 ton of sardine raw material and distributed into the European market may generate up to 68% the total VA (Figure 4), while the processing plants will create 20% of the total VA. As for fishing units and local fish wholesalers, they create only 11% and 1% respectively. These results show that two-thirds of the wealth created by the VC of canned sardines takes place abroad.



**Figure 4. Breakdown of total VA and total net profit per group of agents in canned sardines VC (per ton of raw material)**

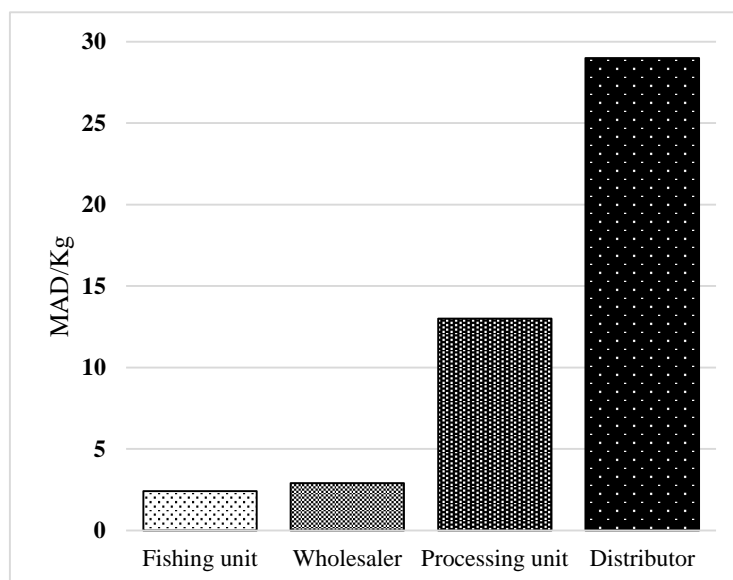


Income distribution (measured by net profit) on the various actors in the VC follows a similar pattern to that of the VA. Distributors are in the lead (63%), followed by processing units (29%), fishing units (7%) and domestic wholesalers (1%) (Figure 4).

### Price formation

The first sale of sardines intended for industrial use occurs at the approval Center of industrial fish. The main buyers are processing units and fish wholesalers. Transactions are managed by the services of the Fisheries National Office. Price is previously adopted according to agreement between manufacturers and ship-owners with the arbitration of the competent authorities. The supply agreement between manufacturers and fishermen can be revised according to the constraints of the factors market. The second sale takes place between the fish wholesaler and the fish processor. The price is negotiable and settlement of the transaction can be done immediately or over time, with the possibility of granting payment facilities. The third sale is made between the processing unit and the distributor located outside of Morocco. The sale price is agreed between the two parties in the order contract. For trading companies, price is discussed for each transaction. The Moroccan manufacturers' price offer is slightly lower than that of European competitors.

In order to provide a more accurate basis for comparison, the price of one kg of raw material (sardine) was traced from raw material state to tin cans distributed in retail market (Figure 5). It was noted that one kg of sardine is sold by distributor at the double of ex-processing plant price.



**Figure 5. Evolution of the price of one kg of sardine at the various stages of the VC (in MAD/kg live-weight equivalent)**

**SWOT analysis of canned sardines VC**

Although Morocco is now the world's largest exporter of canned sardines (*Sardina pilchardus*), with a market share of over 32% (International Trade Centre, 2014), the processing industry have slightly changed over the recent decades. Indeed, the industry has not evolved enough to support and anticipate market changes and demand trends. The increasing liberalization of international trade, the proliferation of free trade agreements signed by Morocco, and the globalization of VCs provide both threats as well as opportunities for the canned sardines industry (Table 2).

*Conclusion:* The value chain of canned sardines intended for the European market is driven by the downstream segment. The central role is played by distribution actors who are usually the product designers. Production is often outsourced to Morocco as part of the distributors brand strategies. The products are labour intensive. The market for canned sardines production has low barriers to entry.

**Table 2. "Strengths, Weaknesses, Opportunities and Threats" analysis of canned sardines VC**

<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>• Leading position on the canned sardines export market</li> <li>• Abundant and relatively cheap raw material</li> <li>• Inexpensive, qualified, and available labour</li> <li>• Modern and relatively efficient production capacities</li> <li>• Historical presence of canned sardines in major markets</li> <li>• "Traditional" canned sardines: well-known product and stable demand</li> <li>• "Skinless and Boneless" canned sardines: high value adding and high range brand image</li> </ul>	<ul style="list-style-type: none"> <li>• Seasonality of raw material supply</li> <li>• Irregularity of sardine quality and grade</li> <li>• Low price competitiveness compared to some emerging countries (Thailand, ...)</li> <li>• Excessive cost of certain inputs: cans, vegetable oil,...</li> <li>• Limited innovation and insufficiently diversified range of products</li> <li>• Lack of VC integration</li> <li>• Lack of aggressive and concerted national marketing strategy</li> <li>• Limited market for value-added products: skinless and boneless canned sardines; ...</li> <li>• Deficient logistics to supply countries with high demand</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>• Great underexploited pelagics stock in the south Atlantic region (zone C)</li> <li>• Product with great potential for diversification and development</li> <li>• Good product image of the Moroccan sardine (<i>Sardina pilchardus</i>) worldwide</li> <li>• Sustained growth in international demand</li> <li>• Proximity to EU market with high demand</li> <li>• Opportunity to gain new market shares, particularly through trade agreements</li> </ul>	<ul style="list-style-type: none"> <li>• Competition from European countries supplied by Moroccan raw material</li> <li>• Competition from emerging countries (Thailand, Latvia, ...)</li> <li>• Pressure from European distributors and supermarkets</li> <li>• Notoriety decline of Moroccan canned sardines</li> <li>• Attempt to widen the name "sardine" to cover other species (<i>Sardinops</i>)</li> <li>• More stringent requirements for product quality</li> </ul>

## DISCUSSION

### **The VC is driven by European distribution channels**

At global level, studies conducted by FAO and Glitnir Bank (Davidsson, 2007) clearly show that a large part of the profits generated along the fish VC is concentrated in the distribution (20%) and the sector of processing industry (30%). This trend is present in both developed countries and developing countries. Results accruing from this study show that distributors hold a key role in the canned sardines VC. They generate up to 68% of the total VA and capture 63% of income distributed to the various actors in the chain. These results confirm the findings of Gudmundsson et al. (2006) that have shown that in the case of the VC of Moroccan semi-preserved anchovy intended for the Italian market, 67% of the VA is created outside of Morocco by the retail segment. In the case of the VC of Icelandic cod fish intended for the North American market, this proportion is about 54%. In the case of the Moroccan small-scale fishery commodity chain, 65% of income accrues to agents other than fishing units (Naji and al., 2014). These findings are consistent with those of Gudmundsson and al. (2006), and Bjorndal and al. (2014) who argue that fishermen receive the lowest economic benefits compared to other agents in the downstream part of the VC. Therefore, it seems that the distributors hold significant power in the canned sardines VC. This power is enhanced by: i) the high degree of competition between the Moroccan processors; ii) lack of control over the marketing channels, especially in the later stages of the sale; and iii) the growing power of European supermarkets and success experienced by private labels.

### **Developing ownership of the canned sardines VA**

End markets are the starting point for any attempt to improve the VC. Morocco needs an aggressive business strategy. This requires the deployment of a marketing approach and a structured sales network. The revitalization of Moroccan exports could rely on an export platform whose mission would be to centralize supply in Morocco, to identify demand in export markets and to establish contacts with importers. This will help to mitigate the Moroccan-Moroccan competition and to strengthen Moroccan companies visibility abroad.

It is clear that this VA domestication attempt is a complex process that presents challenges not only technical, commercial and financial, but will also require an arrangement with the key distributors of canned sardines in the European market. Integrating distributors is a key imperative for products promotion on the European market and for capturing a portion of VA created in this area. End markets buyers are a powerful relay and an incentive for change. They also represent an important source of information on demand and can convey learning. In some cases, they are willing to invest in businesses downstream of the VC.

### **Innovation: another way to capture more VA**

Innovation is an alternative to capture more VA. Although the current canned sardines offer comes in twenty products, the main export volume consists of whole round sardines in vegetable oil. For canned sardines, transformation should target high VA products, for which the European market is the current favourite commercial outlet. This orientation requires efforts on several levels: modernizing the fishing fleet, encouraging the relocation of the European processing companies and promoting partnerships with international players for the transfer of industrial know-how. Development of high VA industry often requires substantial investments in equipment but also intangible investments, such as upgrading skills or developing new

technologies and patents. Furthermore, the increasing environmental awareness among European consumers may lead to an ecolabelling approach in order to preserve market shares while contributing to a sustainable fisheries management.

### **Towards a new governance mode of canned sardines VC**

Despite the complete absence of trade barriers to entry, canned sardines producers do not have all a systematic access to the European market. Limited numbers of distribution channels establish criteria and standards that shape the distribution of earnings in the GVC. Understanding this distribution is facilitated through a better appreciation of the power structure in the VC. Such power and the ability to govern the VC that accompanies it, often lies in specific skills and competencies (design, branding, marketing), where the requirements are very high.

The created VA usually goes to companies involved in the sectors of distribution and to processing industry. However, Moroccan companies tend to be locked into tangible production activities. They are obedient to standards set by dominant European companies and generate low profits. To participate in export markets, Moroccan producers must meet the requirements of world leaders. These demands stem from consumers, NGOs and government agencies and take several forms: traceability, sanitary standards, safety, environmental protection and labour. Furthermore, the findings of our study pointed out a lack of vertical coordination in the VC. Instead of using a link- based approach, the fishery authorities should work towards creating a competitive VC where vertical cooperation between actors allows more efficient transactions and improves the overall industry competitiveness.

### **CONCLUSIONS AND RECOMMENDATIONS**

Application of the VC approach to the sardine canning industry was a first contribution that aimed at better understanding and quantifying the process of creation and distribution of VA from fisherman to end consumer. It can be seen from this analysis that most of the GVC links are held in Morocco, except for the distribution segment, which takes place on European continent. The way VC actors are organized professionally is, most of the time, set horizontally by link without any vertical collaboration between agents. The actors adopt individual strategies with the lack of collaboration or common strategy.

The financial analysis showed that all actors of the VC achieve a decent rate of return, except for the domestic fish wholesaling segment. Value added created by the distribution segment dominates those of the other actors (more than 2/3 of that wealth is created outside of Morocco). The growth potential of VC of canned sardines intended for the European market is real. This potential is supported mainly by the strong demand for seafood, the historical know-how of Moroccan processors in addition to the quality and abundance of its fish stocks.

Some measures may contribute to increase the VA creation of the studied VC and to improve its prospects for development. Better organization of the actors: fishing sector processors will benefit more from developing vertical collaborations according to the value chain-based approach. This type of organization certainly requires the competent authority to undertake a great deal of promotion and sensitization efforts. It will also: i) build on the efforts of all actors in order to promote the chain; ii) minimize value losses at post-harvest segments; iii) help to create a culture of business networking to improve their positioning in the GVC and withstand international competition.

Develop a common commercial policy: The processing industries are called upon to review their commercial policy in order to improve their share of the created VA. The purpose is to position themselves better in relation to the distribution players whose role is gaining more ground. To this end, the processors will need, for example, to work towards reducing the Moroccan-Moroccan competition, also reducing the impact and expansion of the private-brand distribution, and finally, developing promotion policies that have become crucial and decisive even for products that have achieved wide commercial success.

Although the task of public authorities is governed by rules and regulations, these organizations must review and adapt their sectorial development policies in accordance with the needs and expectations of VC actors, including the processing units. The latter should, in exchange, invest more in innovation to adapt their products to customers' expectations, especially for canned sardines whose products have witnessed little change in recent years. The competition from emerging foreign countries - particularly in Asia - and the low level of competitiveness of domestic enterprises should push the processing companies to strengthen their business management and to constantly improve the skills and qualifications of their support teams.

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