1. **An introduction to value chain management in fisheries**

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Fish is one of the most traded commodities globally and contributes significantly to food and nutritional security, as well as livelihood and employment generation. Aquaculture also happens to be one of the fastest growing food production systems globally. The FAO State of World Fisheries and Aquaculture 2020, observes that global fish production is estimated to have reached about 179 million tonnes in 2018, with a total first sale value estimated at USD 401 billion. About 87% of this production goes for human consumption. Fish meets almost 20% of their average per capita intake of animal proteins of about 3.3 billion people globally. Some countries like Cambodia, the Gambia, Ghana, Indonesia, Sierra Leone, Sri Lanka and several small island developing States (SIDS) get more than 50% of their animal protein from fish. Fish can play a very crucial role in meeting the SDGs related to hunger and health. There is however significant wastage of harvested fish due to lack of or improper infrastructure, especially post-harvest infrastructure. This is loss of precious protein. Several factors compound the problem, some of which can be addressed by trying to look at value chains and improving the value of the harvested fish resources along the different nodes of the chain.

Value and Supply Chains
The use of the word value chain has become increasingly common while referring to any process of production and distribution. However often what is described as value chains tend to be supply chains with the concepts often being interchangeably used. The fundamental difference between the two is that while supply chain is the chain of transfer of material from one place to another and begins with a product request and ends when it reaches the customer, value chains are primarily concerned with providing value for price product or service and begins with the customer's request and ends with the product. Thus, in a supply chain, the flow is downwards - of products is from suppliers to consumers. In value chain, the flow is upwards and from the consumer to the source.

The concept and term 'Value chain' was first introduced by Michael Porter in his book 'Comparative Advantage' in 1985. Value chain is defined as 'the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final customers, and final disposal after use". The two major steps in assessing a value chain are identification of individual activities and analysing the value added in each activity and relating it to firm's competitive strength. Porter further divided the activities into primary and support activities (fig. 1).

Fig. 1: Activities in VCA

While supply chains primarily engage in activities like planning and designing a product, sourcing the materials or components needed to produce the goods, manufacturing, delivering the product to the buyer, firms that focus on value chains emphasise on innovation, R&D, product testing, marketing and analysing social and economic trends to gain competitive advantage. The basis for comparison is given in Table 1.

Table 1: Basis for comparison of Supply and Value Chains

BASIS FOR COMPARISON	SUPPLY CHAIN	VALUE CHAIN
Meaning	The integration of all the activities involved in the procurement, conversion and logistics of the product is known as Supply Chain.	Value Chain is defined as the series of activities, that adds value to the product.
Originated from	Operation Management	Business Management
Concept	Conveyance	Value Addition
Sequence	Product Request - Supply Chain – Customer	Customer Request - Value Chain - Product
Objective	Customer Satisfaction	Gaining competitive advantage

Source: https://keydifferences.com/difference-between-supply-chain-and-value-chain.html

From supply chain to value chain management in fisheries

The supply chains in fisheries consist of a set of independent fishers, agents, processors, distributors, and wholesalers/retailers/food services who work together to supply fish or derived product to the consumer. It starts with the fisherman harvesting fish in the oceans or in

inland waters and ends with the consumers who are based in far-off places or markets (De Silva, 2011). All are interlinked because actions taken by one member of the supply chain can affect, improve or disturb the complete chain and also the livelihoods of fishermen who have fishing as their primary source of income. These can have local, regional or global impacts. The fish supply chains are complex and the complexity is accentuated due to several factors. There is significant unpredictability due to the characteristics of the commodity, like the species and products. The diversity as far as the methods of harvest and the perishability of the product also adds to this unpredictability. As mentioned, the end user may be at a far-off point geographically and the market related decisions are often not within the control of the producer. The long chains and multiplicity of intermediaries also makes the process inefficient.

Fishery supply chains must hence start to move to the value chain concept and aim at creating competitive advantage as purported by Michael Porter. While the concept may be close to factories processing seafood for export, there is need to implement this in other contexts as well so that the benefits can be equitably shared among all the stakeholders. Supply chains have expanded over national boundaries and into other continents as a result of globalization and the goal of several companies in increasing their competitive advantage, adding value, and reducing costs through global sourcing.

One of the steps in VCA is breaking the process into its activities. Fisheries involves fishing and post-harvest activities which van include marketing, processing, and other activities that support these basic activities.

Fig. 2: Schematic representation of activities
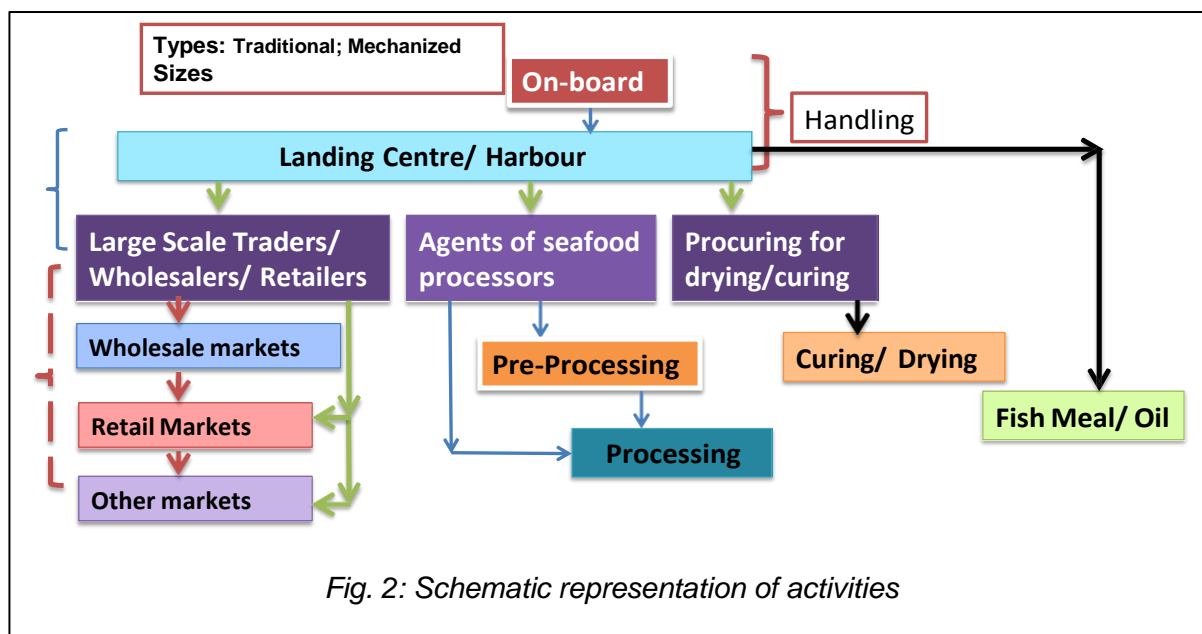
Value chain analysis looks at every step, a fisheries business goes through, from raw materials to the eventual end user. The goal is to deliver maximum value for the least possible total cost. The activities are tied together to ultimately create value for the consumer. The steps involve breaking down the key activities of the company according to the activities, assessing the potential for adding value through the means of cost advantage or differentiation and

determining strategies that focus on those activities that would enable the industry or a company to attain sustainable competitive advantage. De Silva (2011) postulated the moving from the 4Ps of marketing to the 7 Ps (Fig. 3), which gives a framework of how value chains can be streamlined in fisheries.

Fig 3: Creating value chain for fish and fishery products

Value chain with 4Ps – past

• Producer decide products types and production processes (Produce what producer want) • Homogeneous and low volume of production • Production scattered over many small-scale fishermen, farms • Outdated/traditional harvesting technologies • Inadequate information and market ignorance on prices, trends and customer needs	• Poor, inadequate post-harvesting facilities (ice, cold storage and cooler wagons) • Traditional, agent-driven, inefficient procurement system • Extremely poor transportation (roads, harbours, auction halls, marketplaces and logistics) • Infrastructure (lack of ice production, very limited cold storage facilities) • High degree of wastage (poor handling and grading)	• Produce inconsistent inequality • Outdated, inadequate distribution of infrastructure • Limited organized fresh produce retailing • High degree of wastage • Exports constrained by inadequate cold storage, infrastructure, and high shipping and aviation costs • Lack of international certification, quality assurance procedures

Value chain with 7Ps – Present

• Consumer decide product types and processors (produce what consumer want) • Significantly higher yields • Stronger linkages with the market • High awareness levels on price trends and customer needs • Use of modern technology,	• Market beyond national boundaries • Improved post-harvesting technologies available to most fishers and processors • Efficient procurement system with few middlemen • Reduced wastage due to better road/rail and	• Widespread organized fish retailing, demanding higher quality production • Upgraded distribution infrastructure; cold storages at wholesaler (local markets) • Exports facilitated through provision of adequate cold storage/precooling infrastructure at ports/airports

leveraging significant extension work	refrigeration infrastructure	• More concern on services

Source: De Silva (2011)

Challenges

Fisheries in several countries are constrained by gaps in data in several nodes of the supply chain making it difficult in decision making. Some of them are a data at production level and at other levels of resource management, sustainability and legality of a product which are crucial for establishing competitive advantages like quality, green certifications etc. are deficient. There are continued aggregation complexities due to inherent nature of the production process, which will need to be effectively addressed. A cluster approach may be taken as the starting point for value chains (De Silva, 2011). Managing the human side of the process is equally important as power and decision making are inequitably distributed, with the primary producers often being 'takers' rather than 'makers'.

VCA can be used as a powerful tool for all stakeholders in fisheries. This can be effective if supply chain challenges are effectively addressed. Reconfiguration or structural changes of value chain refers to activities such as new production processes, new distribution channels or a different sales approach which can be implemented. New technology opportunities can be harnessed like block chain to streamline activities.

References

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