FOOD LOGISTICS: A STUDY ON LOBSTER FISHERIES, SRI LANKA

Ruwini L. Basnayake[1], D.A.M. De Silva[1], Srijanaranjana Ekanayake[1], Upul Liyanage[2]
[1]Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka
[2]National Aquatic Resources Research and Development Agency
ruwinibasnayake@agri.sab.ac.lk, desilva.achini@yahoo.co.uk

ABSTRACT - Food logistics is playing a vital role because of the importance of on-time delivery with minimum or no food waste since the majority of food products have a very short shelf-life. Lobster fishery is one of the most economically important marine coastal fishing activities, since it is a good source of foreign exchange. This study carried to studying of the current logistics practices in lobster fisheries, to identify the loopholes in the current logistics system and to recommend strategies to improve the system. Interviewer administrated questionnaires, in-depth interviews were facilitated to collect required data from 30 fishermen, 05 collectors and 03 exporters. The results revealed that, the supply chain of lobsters is consists with fishermen, collector, distributor and exporter or local hotels and the inbound freight management is in very poor level with zero traceability from upstream to downstream. while outbound logistics are more concerning on keeping product quality since, the end product is exporting as live animals. Introducing proper cages to handle the animals, training on importance of proper inbound logistics management and further, precise planning, execution, and efficient monitoring to effectively manage the movement of lobster from sea to plate with minimum wastage.

Keywords: Lobster Fisheries; Logistics; Sri Lanka; Supply Chain

1. INTRODUCTION

Logistics management deals with receiving, handling, movement, storage and delivery of material, services and finished product in a supply chain management system. Logistics is required both at the beginning and at the end of it. Food chain logistics is a significant component within logistics system as a whole. The food sector plays a significant role in economy being one of the main contributors to the GDP of many countries [1]. Lobster fishery is one of the most economically important marine coastal fishing activities. The lobster market is export oriented and household consumption is negligible [2]. Major importing countries are Japan, Hong Kong, UK, Singapore, and Korea. In 2019, the lobster exporting quantity recorded as 229Mt. and value recorded as Rs. (Million)1003 [3]. Lower quality lobsters (Under sized, newly mounted once, Damaged or died lobsters) are sold to the local market at cheaper prices [4]. The product of the lobster is available as Whole Lobster, Lobster Tail, Lobster Meat and Lobster Claw. However, whole lobster represented the most popular product with minimum weight of 300g with zero damaged and followed by tail, lobster meat and claw. If there are any damages occurred during catching and handling of lobsters could be cause to rapid quality deterioration Hence, the production areas are mainly in southern, eastern coastal areas and exporters are located in western province, the distribution system or the logistics system is playing a crucial role for determining the price.

2. MATERIALS AND METHODS

The study location was southern coastal area, where that area has identified as the most important lobster fishing area in Sri Lanka. Research approach was deductive and the study was based on primary data. The principal data collection tools were interviewer administrated questionnaire, in-depth interviews with key informants and on-site observations to find out the existing logistics system and practices and

issues in those systems. The sample size was 30 fishermen, 05 collectors and 03 exporters who are currently engaged in lobster fishing industry.

3. RESULTS AND DISCUSSION

The results revealed that, the supply chain of the lobster fisheries consists with fishermen, collector, distributor, local hotels and exporters. Other than that, institutions such as Department of Fisheries and Aquatic Resources, National Aquatic Resources Research and Development Agency (NARA), Village level Fisheries organizations are involving on governing the industry. Further, the market for lobster fisheries is mainly based on exported oriented and local tourist hotels, while high quality lobsters are going for the export markets, low quality died animals are mainly going for the tourist local hotels. Figure 1 depicts a generic supply chain at the different level within the context of a complete supply-chain network. Each member is positioned in a network layer and belongs to at least one supply chain. Of the sample of fishermen 100% are males and 82% are having up to O/L education only. 70% are skin diving and 30% are using nets to catch the lobsters.

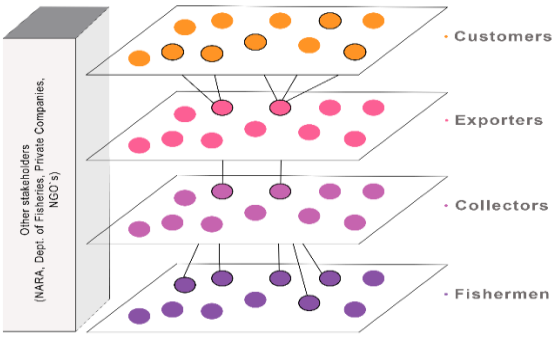

Figure 1. Schematic Diagram of Lobster Supply Chain
(Lazzarini et.al.,2001)

The existing inbound logistics system mainly govern by the fishermen and the collectors. 100% fishermen of the sample are using polythene bag or a gunny sack to catch the lobsters and transport to the collecting centers. They are packing 10-15 lobsters per bag and to transport live lobsters to the collecting centers they are using their own vehicles such as three-wheel, cycle or motor-bike or public bus services which is mainly causing degrade the quality. Once the lobsters reached to the collecting centers, died lobsters are storing in refrigerators while live lobsters are putting in to salt level maintained (3400-3500ppm) tanks (10*10ft) until dispatch to the exporting companies. In the collecting centers, they are grading the lobsters according to the weight and damage and poor quality (Grade -II) lobsters are buying for half of the price of original price.

The outbound logistics system mainly governs by the exporters. They are using van with A/C to transport live animals from the coastal areas to factories. In there, they are using regiform boxes. They are adding dried beach sand to the animal and cover with news paper stripes, and further they are adding deepfreeze four water bottles in the corners of the regiform boxes by wrapping with a newspaper. This system is helping keep animal live for 14hours time. From the exporter level, again the animals are grading according to the weight and quality, they are also use same procedure for packing the animals when they are exporting except adding beach sand, they sink in de freeze water for 10-15min to asleep for a certain time period, with that again they can keep live nearly 17hours in the air-flights until reach to the exporting destinations. The majority of the exporters of my sample are exporting Hong-Kong, China, Singapore and Maldives. In the local hotels after they received died animals they are storing in refrigerators and live animals are keeping in the water tanks.

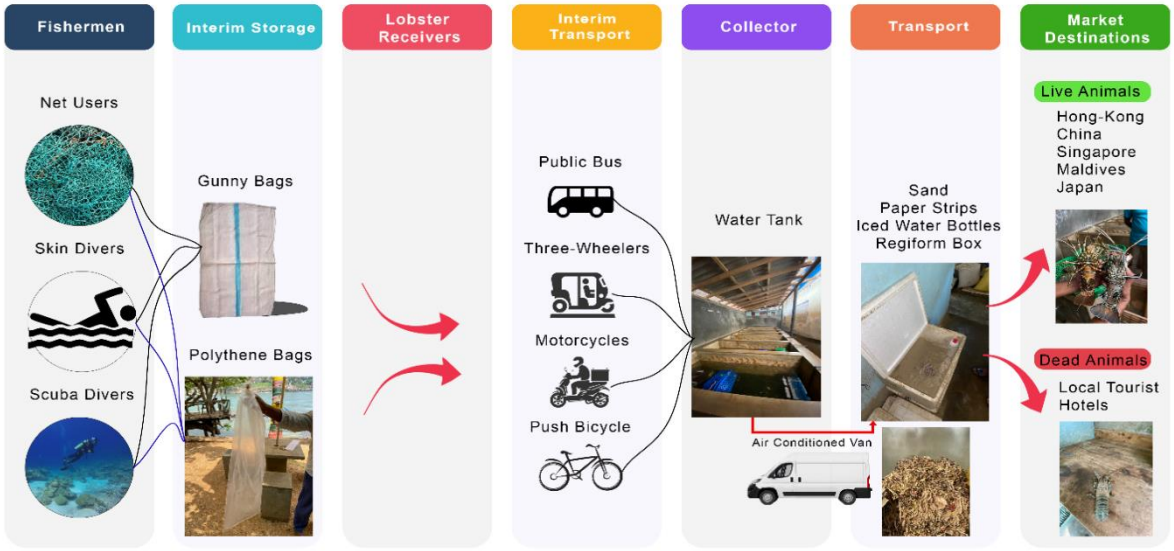

Figure 2. Existing Lobster Logistics System
(Survey Data:2022/March)

The main loopholes in the logistics system are, not having proper handling method when catching lobsters, improper storing in transportation and improper inbound logistics practices.

As the strategies to improve the existing system are educate the fishermen on effective logistics management is a critical success factor for them as well to gain higher profits, band the existing traditional methods of lobster handling and storing and introduce internationally approved methods such as; insulated shipping carton for transport lobsters. Which are having protective foam container that keeps lobsters protected from temperature changing, providing natural cushioning, necessary for shipping all forms of lobsters., promote to use cold packs or gel packs instead of water bottles which minimize the damage to lobsters. And also maintaining integrated logistics management system with proper traceability to trace where the low-quality products are coming and get the action to avoid it is again important to implement for better logistics management in lobster fisheries.

4. CONCLUSION

The study has identified that, even though the lobster fisheries are having higher export market demand, usage of primitive methods of lobster handling, storing while transporting from sea to plate resist the pathway of earning higher profits. Further, integrated logistics management system with internationally approved method and proper traceability is essential to mitigate the current issue of the lobster industry.

REFERENCES

1. Gebresenbet, G., & Bosona, T., (2012). Logistics and supply chains in agriculture and food. IntechOpen.
2. Koralagama, D.N., Amaraslnghe, O., and Jayakody, S., (2007). Export market of lobsters in Sri Lanka, with special reference to slipper lobsters, Proceedings of the fourth academic sessions, technical session III, University of Ruhuna, 84-90
3. Fisheries Statistics, (2020). Ministry of Fisheries & Aquatic Resources Development
4. Liyanage, U. and Long, B., (2019). Status of the South Coast Lobster Fishery, National Aquatic Resources Research and Development Agency
5. Lazzarini, S., Chaddad, F., & Cook, M., (2001). Integrating supply chain and network analyses: the study of netchains. Journal on chain and network science, 1,1, 7-22