

Investigating the Status of Gender Equality and Women's Empowerment in Dried Fish and Maldivé Fish Processing: A Case Study of Dondra and Kottegoda Fisheries Divisions in Matara Coastal Region, Sri Lanka

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Abstract

Women in coastal communities play a crucial role in strengthening the household income. Dried fish processing has become a reliable source of income, helping to minimize the uncertainty of fishing earnings and serves as a way of life for women. This study analyses how fish processing empowers women in coastal areas and its role in gender equality. This was achieved through a structured questionnaire- based survey conducted among the randomly selected 60 female fish processors in the Dondra and Kottegoda fisheries divisions located on the southern coast of Sri Lanka, followed by focus group discussions and key informant interviews . Results show that profit margins of dried fish and Maldivé fish are 38.2% and 23.8% per kg, respectively. The monthly average production scale is less than 100 kg for 11 dried fish and 21 Maldivé fish processors. On average, women save 35% and 30% of their profit for emergency funds and for additional expenses, respectively, such as children's education. Women are economically and socially empowered. They get equal or greater opportunities in decision making, accessing training on fish processing and support services, and building market linkages. The lack of value addition and the use of low- quality inputs are the main drawbacks of fish processing in the study area.

Keywords: Fish processors, Gender equality, Empowerment, Women

1 Introduction

The fisheries and aquaculture sector accounts for one of the world's major sources of employment, engaging 59.5 million people in 2018. Though it is considered a male dominant activity, current statistics illustrate that 14 per cent of participants are women (Food and Agriculture Organization, 2020). In the fisheries sector, women's contribution is most prominent in pre- and post-harvest activities. Many authors and non-governmental organizations have reported that one out of every two workers in both primary and secondary sectors in fisheries are female (Food and Agriculture Organization, 2020). Hence, 50% of people who earn money directly from fishing and processing are women (Food and Agriculture Organization, 2020).

Fisherfolk's wives and the women who engage in fishery activities are called 'Fisherwomen' (Anna, 2012). In fishing communities across Asia, men typically engage in fishing as their main income-

earning activity, and women play a crucial role throughout the fish value chain by providing labour and acting as small-scale entrepreneurs. In the global fisheries context, women's contributions are visible in both small-scale and commercial sector fisheries. In the small-scale fishery sector, women participate in fish harvesting in shallow waters or near-shore fisheries, as well as in fish processing. However, in the commercial sector, they are active as paid labourers (Arenas & Lentisco, 2011).

Fish processing has become an important income source for women in coastal areas in Sri Lanka (Silva et al., 2018). Among the diverse activities in fisheries, women mainly engage in pre- and post-harvesting activities such as making fishing nets and baits, preparing food for the people who sail on fishing vessels, fish processing, handling, and marketing (De Silva & Yamao, 2006). Studies have shown that women's participation varies across regions. In the west and north-west coastal regions

of Sri Lanka, women engage in fish processing, handling, and marketing at domestic markets (De Silva & Yamao, 2006). According to Lokuge and Hilhorst (2017), low-income fisherwomen on the east coast engage in gleaning for clams and mussels, and collecting seaweeds, which they sell at the local markets via mobile sellers. Further, women take part in mending and pulling the last end of the beach seine in some areas of the East and North-West coastal regions. Veder women in the indigenous Tamil community in the Southern border of the Eastern region, work on beach seines from the point they are set to when the harvest is landed. This is the only reported fishery activity where women's involvement can be observed throughout the entire beach seine pulling process in Sri Lanka (Lokuge & Hilhorst, 2017). Certain coastal regions of the country, such as Negombo and Chilaw (West coast), Mannar (north), and Batticaloa (east), culturally show greater involvement of women in fresh fish marketing. These are also the regions where artisanal fisheries still persist. In the Southern region, women are less involved in marketing, as these areas are dominated by centralized fishing. A prominent reason for the regional variations in women's participation is religious and cultural diversity. Female participation in fish handling, grading, and marketing can be observed in regions where Christian and Muslim fisher folks live. Muslim women engage in fish processing but are prevented from working in inshore fishery activities (De Silva & Yamao, 2006). Similar situations can be observed on the southern coast, where the Buddhist culture dominates. Therefore, women in southern coastal areas participate only in processing activities at home (De Silva & Yamao, 2006).

Gender equality means that the different behaviour, aspirations, and needs of women and men are considered, valued, and favoured equally. It does not mean that women and men are the same, but that their rights, responsibilities, and opportunities are not deprived or dependent on whether they are born male or female. Women in fishing communities face inequalities in accessing education, information, training programmes, credit, and bargaining power in the fisheries sector (Food and Agriculture Organization, 2013; Hao, 2012; Lentisco & Lee, 2014). They are marginalized due to limited access to transport to distant

markets, and their family roles restrict the scope of their economic activities. Women have less access than men to transport, information on quality standards and regulations, and marketplaces. They are also exposed to greater harassment in markets and have more difficulty in securing storage facilities in the markets to store unsold fish (Food and Agriculture Organization, 2013; Kumari, 2016). Although women are involved in fish processing, they have been highly marginalized due to a male-dominant fisheries society. Rabbanee et al. (2012) suggested that women are not socially empowered in fisheries communities.

Studies have shown that women in fisheries communities have limited opportunities in building formal linkages with public and private institutions, as well as accessing markets, technology, and information (Lokuge & Hilhorst, 2017; Rupasinghe et al., 2011). In the case of the fish processing business, knowledge of the market channels, market prices, and price behaviour is also low among women fisherfolk, as information dissemination has limited compatibility with their isolated lifestyle. Therefore, they do not have much knowledge of enterprise management due to the lack of entrepreneurial support from government or NGOs (Rupasinghe et al., 2011).

Women's contribution to the fisheries sector in Sri Lanka is still undervalued (Lokuge & Hilhorst, 2017). Further, statistics of female employment in the fisheries sector are not recorded in census data in Sri Lanka (Fitriana & Stacey, 2012; Lentisco & Lee, 2014; Weeratunge et al., 2009). Korlagama et al. (2017) discuss the limited opportunities and recommend that gender equity should be established through adequate empowerment, representation, and decision-making power to women. Several studies have discovered that economic empowerment can help fisherwomen overcome poverty and ensure they are treated as equals to men (Anna, 2012; Purwanti, 2018).

Fish catch is largely unpredictable. Fishing is a livelihood that is affected by weather and climate factors such as "El Niño-La Niña conditions and variations in seawater currents. Women in fishing communities take care of their children's nutrition, education, and health under these challenging circumstances. Due to weather challenges (Silva et al., 2018) found that fisherwomen in Southern Sri Lanka engage in alternative livelihoods as a coping strategy. Dried fish and Maldive fish

processing are among the main alternatives. Fish processing is possible as they can use the excess fish from the landed fish, and the long shelf life of these processed fish ensures their livelihoods during the off- seasons as well (Silva et al., 2018). Sri Lanka imports various processed fish products to fulfill local demand (National Aquatic Resources Research and Development Agency, 2017). In 2017, 33, 012 Mt of dried fish products were imported, accounting for 65% of total fish imports, while Maldivian fish represented 4% (Ministry of Fisheries and Aquatic Resource Development, 2018). Hence, there is a substantial demand for dried fish in the market, and if local fisherfolk are equipped with the necessary knowledge, skills, and technology, the local dried fish industry could become a profitable business venture by fulfilling the local demand. As females stand for the main contribution in dried fish processing, this highlights the importance of empowering fisherwomen in Sri Lanka (Silva et al., 2018). Therefore, this study focuses on how fish processing enterprises can empower fisherwomen to ensure gender equality in the coastal area of Matara district.

The study is concentrated on the female perspective regarding the opportunities provided to women compared to male fisherfolk, to ascertain gender equality levels. It also determined the barriers faced by women fish processors in the coastal area of the Matara district. Furthermore, the study provides suggestions to improve fish processing as a profitable business enterprise, that would help empower women in the fishery sector and fulfill the demand for dried fish locally.

2 Methodology

The paper is based on a study conducted by interviews with women fish processors, selected by simple random sampling in Dondra and Kottegoda fisheries divisions in the Matara district of the Southern coastal region. A structured questionnaire was used for data collection.

2.1 Study area and sampling

The southern province of Sri Lanka consists of 3 administrative districts: Galle, Matara, and Hambantota. In 2017, the Southern coast of Sri Lanka had 29,280 marine fishing households, with a population of 130,890. There are 39 580 active fishers, both men and women in the region (Ministry of Fisheries and Aquatic Resource

Development, 2018).

The target population was women fisher folk involved in fish processing in the Southern coastal region. Dondra and Kottegoda fisheries divisions in the Matara district were selected as the study areas, as these areas are popular for dried fish and Maldivian fish processing in the Matara coast (Figure 1). The major occupation of people in Dondra is fishing; most of the men in the area are either boat owners or crew members. The Dondra fishery harbour has one of the largest numbers of registered boats in the Southern coast (Ministry of Fisheries and Aquatic Resource Development, 2018). Kottegoda is a fishing village located in the Southern coastal region, close to Dondra. and is famous for Maldivian fish processing as both a major and supplementary source of income.

The sample population was selected using the Simple Random Sampling technique, based on the registered list of dried fish and Maldivian fish processing women obtained from the fisheries inspectors of the Dondra and Kottegoda areas. Sixty fish processors, 30 women from each area were interviewed. Data collection was done first by conducting an exploratory study and later a questionnaire survey.

2.2 The exploratory study

Before the questionnaire survey was conducted, a focus group discussion was held in Dondra with 15 women processors. They were divided into two groups: one consisted of 08 members and the other consisted of 07. Data was collected using Participatory Rural Appraisal (PRA) tools. Activity profile and access and control profile tools were used to identify how the women were involved in dried fish and Maldivian fish processing. The activity profile tool helps to identify how males and females engage (labour hours) in fish processing. The access and control profile was used to understand the access and control over the resources. Access refers to the opportunity to use resources, and control is the power to make decisions regarding resources (Assefa & De Roo, 2015).

2.3 Data collection

Primary data were mainly collected using a pre-tested structured questionnaire. The questionnaire focused on discovering facts regarding the status of dried fish processing, such as its role as a

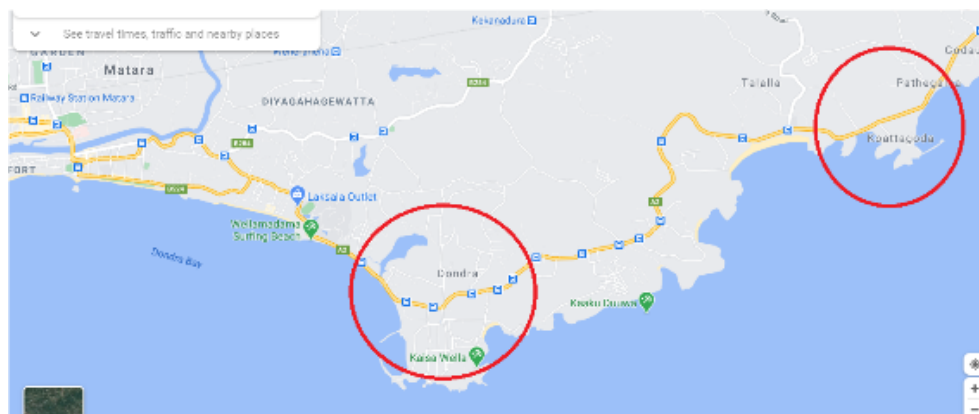


Figure 1: Map of Dondra and Kottagoda

supplementary income-earning method and the problems faced by the women engaged in dried fish processing.

3 Results

3.1 Current status of the fish processing industry in Dondra and Kottagoda

Dried fish and Maldiv fish are the two types of processed fish products. Tuna species are the most popular fish species used to produce both types of processed fish. Indian scads, Frigate tuna, and Yellowfin tuna are the common species used in dried fish production.

Socio-demographic factors of the sample show that 68% of women fish processors are middle aged; 96% are married; 45% have up to secondary-education levels (Table 01).

Two fish processing seasons exist: the peak and off-seasons. Climatic factors are the main determinants for this seasonality in the fish processing industry (Rabbanee et al., 2012). Due to these seasonal variations, women's involvement in the industry ranges from part-time to full-time. More than half (57%) of the women are engaged part-time in dried fish processing. They engage in fish processing from May to September, during South-West monsoons, when there is a bumper harvest and surplus landings from coastal crafts. They buy fish at very low prices during these periods. Conversely, they produce dried fish from their own harvest and 43% of women engage in full time processing. The scale of production can be categorized into four groups as micro, small, medium, and large. Table 02 describes the number of producers and their scales of production per month. Thirty eight (38) women in the sample

produce Maldiv fish only, while 21 women engage in both Maldiv and dried fish production. Only one woman produces solely dried fish. Table 03 describes the average production per month for each production scale.

3.2 Economic analysis of dried fish and Maldiv fish processing

Empowerment of women to gain control over their lives is one of the Millennium Development Goals of the United Nations, and is also included in the Sustainable Development Goals under gender equality (United Nations Sustainable Development, 2018).

Hence, it is important to calculate the profit margins of this industry as it will contribute to empower the women in coastal communities. Raw fish and labour are the main inputs in dried fish production: 3 kg of raw fish is required to produce 1 kg of dried fish while 5 kg of raw fish is required to produce 1 kg of Maldiv fish. Fish cutting, cleaning, salting, and drying are the main activities. The number of labour hours depends on the bulk weight of the raw fish used for processing. As a cottage industry and operated as a family business, the majority (50%) of processors use family labour. Overhead costs are negligible under sun drying processing. The cost of production for 1 kg of dried fish is 340 LKR (1.84 US\$, based on an exchange rate of 1 US\$ = 185 LKR during the period of the study in 2018). If the cost of family labour is excluded and the opportunity cost is considered zero, 91.5% of the cost of production is related to the raw fish contribution. Hence, the cost of production mainly depends on the price of the raw fish, as well as where and how it is purchased. Three fishery harbours are located in the study

area: Dondra, Mirrissa, and Suduwella. Dondra and Mirrissa fishing harbours serve multiday boats, while Suduwella is a small harbour, which provides facilities to day boats owned by small-scale fishers. Most (63%) women processors purchase raw fish from harbours where multiday boats are operating and they can buy poor quality fish from offshore crafts in very low prices. Alternatively, others (15%) obtain fish from their own boats and 22% purchase fish from external suppliers. The external suppliers deliver fish to the doorstep and charge a 5% commission per kilogram of fish, in addition to transport costs. Generally, first-grade quality fish is used for direct consumption as fresh fish, and the second-grade is used to produce Maldivian fish, while the lowest (third-grade) quality fish is processed into dried fish.

According to the economic analysis of dried fish, the gross profit per kilogram of dried fish is 210 LKR. The average production per month in the area is 150 kg, resulting in a monthly income of 31,500 LKR (Table 04). The profit margin for dried fish production is 38.2% kg⁻¹. Profit margin varies with the scale of production of dried fish. The average monthly production and the monthly profit in different production scales of dried fish are shown in Table 05. As expressed by several small-scale fish processors, they earn a healthy profit margin only if they use poor quality raw fish for processing.

As the profit margin of the micro-level processors is lower, they always try to reduce the production cost by purchasing poor quality fish which are physically damaged and not suitable for direct consumption; sometimes these fish are about to rot. This has become one of the major bottlenecks for producing a high quality product.

Maldivian fish require more labour hours compared to dried fish. The economic analysis of Maldivian fish shows that the gross profit per kilogram is 237.50 LKR. The average monthly production of Maldivian fish in the area is 265 kg. Therefore the average monthly profit is 62 937.50 LKR (Table 06). And the profit margin is 23.8% kg⁻¹. However the profit margin varies based on the production scale. The table 07 shows the average production per month and the monthly profit in different production scales of Maldivian fish.

The monthly profit margins for one kilogram of dried fish and Maldivian fish are 38.2% and

23.8% respectively. Both the products have similar profit margins with slight reduction in Maldivian fish production due to the increased cost of inputs.

However, marketing and trading of dried and Maldivian fish have become critical. As women are bound by various household responsibilities, they rarely take their products to outside markets. The majority of the women (86%) sell their products to the traders who visit their homesteads. These traders often possess oligopolistic purchasing power, and women report that the prices offered to producers are very 'unfair'. However, the study found that medium-and large-scale women producers (14%) have explored new market linkages, such as transporting the products to the countryside areas and selling the products at village fairs.

3.3 Supplementing the family income

Women in fishing families play multifaceted roles. In addition to managing household chores, they support their family income. This study examined how these women spend the income earned from fish processing to meet various family needs. Results show that fish processing has become the primary livelihood for 16% of the women. 32% cover their additional household expenses, such as children's education, social activities, and leisure activities using their fish processing income. The majority (35%) of women save the income earned by fish processing as informal savings, intended for use as emergency funds (Figure 2).

3.4 Female fish processors perception on gender equality status

Women face various challenges when doing business compared to men, and there is a gap in opportunities to access. It is important to describe women's situations in relation to men as well as to explore and understand inequalities across various aspects between men and women. Women in fisheries have either fewer opportunities than men or, as this study uncovers, women fish processors' perceptions regarding equality status in various situations women encounter-such as making decisions in business activities, building market linkages, bargaining and negotiating, accessing loans, and new technology.

The study focuses on analyzing women fish processors' perceptions of equality in various

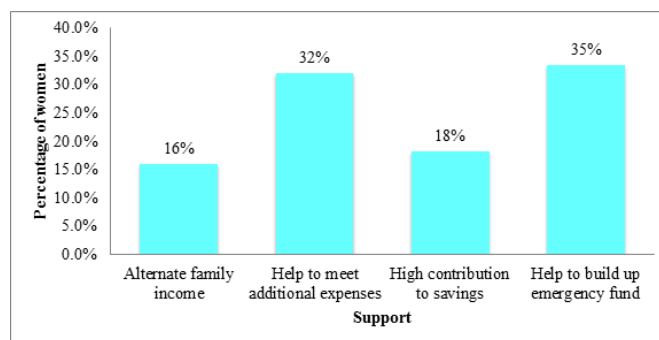


Figure 2: Various ways of spending the income earned from fish processing in selected group

business activities. Using a Likert scale, women are asked whether they receive very high, high, equal, low, or very low opportunities compared to men for each factor given in Table 08. The scale scored from +2 to -2 where +2 indicates very high opportunities and -2 indicates very low opportunities. The mean value of the given factors in Table 08 helps to quantify the women's perception of gender equality. For example, if the mean value of a given factor is close to +2, that implies the women in the study area received very higher opportunities compared to men for the particular factor. On the other hand, the Wilcoxon signed rank test results indicate whether there is a significant relationship between each factor and women's perception on gender equality. The results reveal a significant relationship ($p < 0.05$) between the given factors and the women's perception regarding gender equality, except for access to loan facilities and access to technology ($p > 0.05$) (Table 08).

According to the results in Table 08, women receive equal or higher opportunities compared to men in decision-making related to business, access to training, and support services from private, public, and community-based fishery organizations in dried fish and Maldivian fish processing in the study area (The mean values ≥ 0). Since women in fishing communities often manage both family and business roles, many engage in fish processing at home. This setup allows them to establish market linkages primarily with buyers who visit their home yards (mean value = 1.27), whereas men typically transport products to outside markets, building external market connections (mean value = -0.54). Due to cultural practices along the southern coast, only men are allowed to purchase fish directly at the harbour, which limits women's ability to negotiate prices for

raw fish (mean value -1.97).

The results of the Access and Control Profile from the Focus Group Discussion also describe gender-based differences in the use of, and decision-making power over, resources used in dried fish and Maldivian fish processing. As described in the methodology, marks were given out of 10 for access and control for each resource based on gender. Women fish processors stated that women have greater access to and control over physical materials used in fish processing, firewood, and subsidies provided by the fishery community organizations, whereas men hold more access to and control over fresh fish, transportation, and market than women (Table 09).

3.5 Bottlenecks in fish processing

Low quality inputs is one of the main problems faced by women fish processors. The quality of dried fish mainly depends on the quality of the inputs-fresh fish. Multiday boats are the main source of fresh fish, and 83% of women purchase fish from multiday boats as they are available at low prices. As multiday boats remain at sea for months, a large quantity of second- and third-quality fish becomes available. Normally, these fish are bruised and are known as the second quality and third quality. Such fish are being sold at low prices to the fish processors. Women who receive support from external suppliers have faced problems with low-quality fish.

Fishing communities around Sri Lanka vary in their cultures. Southern areas are nurtured with Buddhist cultures, while northern, eastern, and western areas are based on Hindu, Christian, or Tamil Christian cultures. These cultural backgrounds influence livelihood activities. As a cultural practice, women in southern coastal communities do not engage in activities at fishing

harbours. None of them are allowed to go to the harbours; only their husbands or other male partners are permitted.

Only 13% of women in the sample produce value-added products, which means product differentiation, and among them, seven women produce bottled or packed small pieces of Maldivian fish, while one woman produces packed dried fish. The women are not aware of the market demand for value-added products and are unfamiliar with value addition, labelling, and related practices. They have mentioned that they have the capability for value addition if knowledge and technology are provided.

In the case of using new technology, in the Matara coastal region of Sri Lanka, the sun drying technique is the sole technology used to produce dried fish and Maldivian fish. Only 47% of women in the sample use new technology such as a furnace or electrical dehydrating machine. Twenty-five women use a furnace to smoke fish when producing Maldivian fish, and only one woman has an electrical dehydrating machine. The high cost is one possible reason for not adopting new technological equipment.

Another problem identified is the lack of or limited opportunities for loan facilities. Loan facilities have been provided to women dried fish processors through banks (self-employment loans), fisheries community organizations, and government institutes such as the Divisional Secretariat office. However, only 48% of women have taken loans. Most women have not taken loans due to the lengthy documentation process, high-interest rates, and the requirement for collateral by banks.

Apart from the main barriers, women face a lack of several facilities. Among these, the major issues faced by women fish processors are inadequate materials and equipment, fluctuating market prices, lack of finance, and limited market opportunities (Figure 3).

4 Discussion

The results reveal that women fish processors earn an income which can be used to cover the additional family expenses. Besides, the profit analysis shows that there is a profit margin of Rs. 210 kg⁻¹ for dried fish and Rs. 237.50 kg⁻¹ for Maldivian fish. Therefore, fish processing is an occupation which can be developed up to a business

venture, leading to the emergence of female fisher folk as entrepreneurs. This situation would lead to women's empowerment because women have stated that they have social empowerment and decision-making opportunities as employed women rather than women who are just housewives. Besides, most studies have emphasized the timely need to empower women in fisheries communities to overcome poverty as well as gender inequalities (Anna, 2012; Koralagama et al., 2017; Purwanti, 2018).

When considering that the opportunities for women fish processors in the study area receive, they get more or equal opportunities compared to men in fisherfolk in accessing physical resources, decision making regarding employment, and receiving the support from institutional levels and training. Women have stated that, as the main handler of the dried fish business, women have the freedom toward the above-mentioned aspects. However, it is a positive sign compared to the global context. Studies have discovered that most of the government programs are targeted on fishermen in coastal regions and all the subsidies and economic support are given for fishermen and women get less opportunity to actively take part in social activities and get social responsibilities (Anna, 2012; Hao, 2012; Shyam & Geetha, 2013; Yap et al., 2017). Additionally, Arenas and Lentisco (2011) have explained that fisherwomen have lower access to decision-making in fisheries communities and women have low self-esteem, as men are treated as a superior party in fisheries communities. This situation is different in the southern region, as women have mentioned that they are strong enough to make decisions and they empowered and socially recognized.

In the case of marketing the products, women tend to sell their products to the wholesale buyers who visit the doorsteps. Therefore, women get higher opportunities than men to build up market linkages with buyers who visit them. As the fishermen are involved in transporting the products to outside markets, they get higher opportunities to establish linkages with external markets. Rupasinghe et al. (2011) also have explained that women do not transport their products to outside markets due to high transportation costs and their family roles, which limit their market access as well. This situation is common across the Asian region, as women dried fish processors in Bangladesh sell

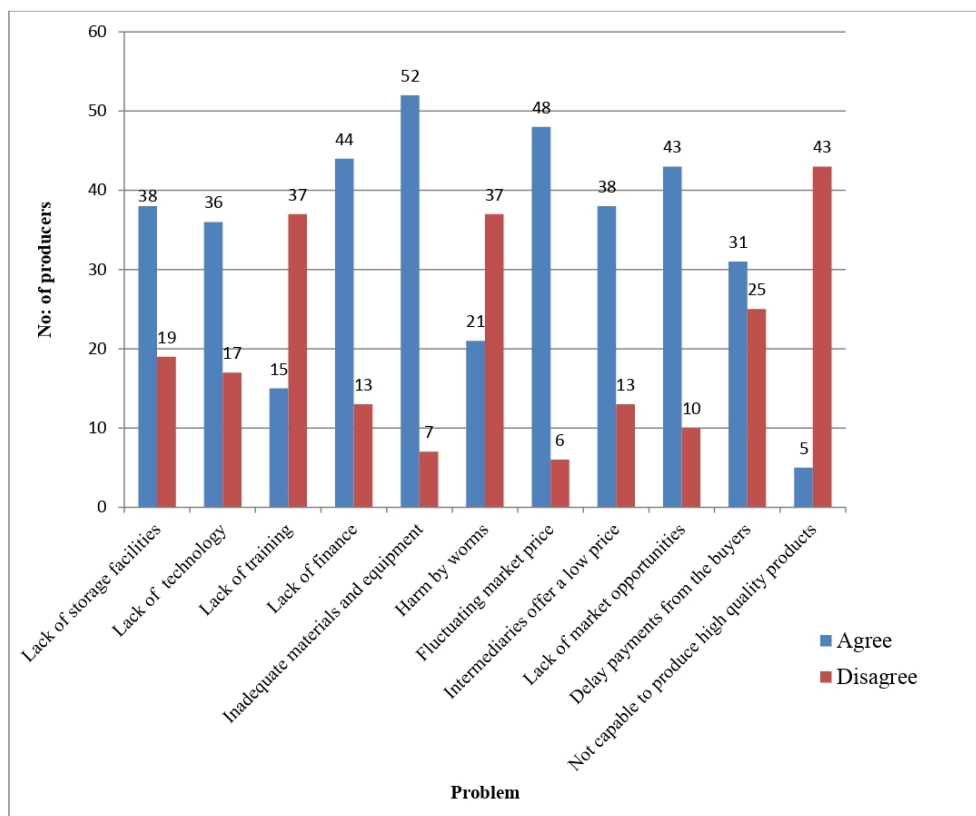


Figure 3: Problems faced by women dried fish processors in the study area

their products to the whole sellers who visit their yards (Rabbanee et al., 2012).

Women have no bargaining power for raw fish, and the control remains with men, as women being present on a beach or at a harbour is considered socially inappropriate on the Southern coast of Sri Lanka. De Silva and Yamoah (2006) also observed this fact. Kusakabe (2016) also emphasizes that social norms regarding gender have limited the fisherwomen involvement in markets and hindered their emergence as women entrepreneurs.

The problems faced by the women fish processors, such as lack of equipment, barriers in accessing loans, and bargaining for fresh fish prices, have been obtained in other studies as well. Rupasinghe et al. (2011) also have observed this fact. Alami and Raharjo (2017) also emphasize the requirement of policies that facilitate financial loans to fisherwomen to initiate their own business of fish processing and improve their entrepreneurial activities.

Alternatively, women do not have the knowledge and skills in product differentiation, which is more demanding in the current markets. Rupasinghe et al. (2011) also have mentioned that the lack

of market information dissemination regarding the market demand for differentiated products like 'Maldivian fish mix' is the reason why women do not produce such products. In addition, usage of traditional sun-drying techniques has limited the production, as climate changes such as rainfall can reduce the output and lead to contamination. Alami and Raharjo (2017) also found that women fish processors in Indonesia also engage in fish processing through traditional ways using limited equipment.

Considering the above constraints, the study suggests that facilitating the local dried fish producers with training, knowledge, and technology in value addition to establish themselves in the local markets through appropriate policies and regulations. Enhancing local dried fish production would help reduce import expenditures and empower fisherwomen as entrepreneurs, as women in fisherfolk communities are engaged in fish processing. Alami and Raharjo (2017) also mentioned that policies are essential to enhance knowledge on value addition in fish processing, develop market opportunities, and emerging business enterprises.

5 Conclusion

Dried fish processing provides supplementary income for women in the Dondra and Kottegoda fisheries divisions of the Matara coastal region of Sri Lanka. Hence, this enterprise has supported increasing income, building up emergency funds, and meeting additional expenses for children's education, social life, and leisure activities. There is a growing trend of women engaging in fish processing in the study area, and the women have become strong enough to make business decisions as well as household decisions. This situation has contributed to empowering women socially and economically. Moreover, women receive equal opportunities as men in terms of decision making and taking support from institutional levels, as they are employed as fish processors.

However, fish processing is a profitable business with a profit margin between 210 SLR-238 SLR.kg⁻¹. Hence fish processing in the Dondra and Kottegoda divisions of the Matara coastal region of Sri Lanka can be further uplifted by enhancing women fish processors' attitude and knowledge on market demand and importance of value-added products, to use higher quality fresh fish as inputs and adopt improved processing methods.



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Table 1: Socio-demographics of the sample

Description	Category	Frequency	Percentage (%)
Age	16-30	11	18.33
	30-40	15	25.00
	40-50	11	18.33
	50-60	15	25.00
	60-70	06	10.00
	Above 70	02	03.33
Marital Status	Married	58	96.7
	Unmarried	02	03.33
Educational Level	Not schooled	01	01.70
	Up to grade 5	03	05.00
	(Primary)		
	Grade 6-10	20	33.30
	Up to O/L	27	45.00
	(Secondary)		
	Up to A/L	09	15.00

Table 2: Number of the women processors and their scales of production

Scale of Production /per month	Dried Fish (number of producers)	Maldive Fish (number of producers)
Micro (less than 100kg)	11	21
Small (101-200 kg)	08	06
Medium (201-500kg)	03	19
Large (more than 501kg)	01	13

Table 3: Average production per month

Scale of Production per month	Dried fish Average production (kg/month)	Maldive Fish Average production (kg/month)
Micro (less than 100kg)	34.36	38.86
Small (101-200 kg)	168.75	140.00
Medium (201-500kg)	250.00	305.53
Large (more than 501kg)	1050.00	611.54

Table 4: Economic analysis of dried fish production

Description	Amount (LKR)	US\$	Cost as a %
Price per kg of dried fish (household-gate price)	550	2.97	
Total Revenue (from 1kg of dried fish)	550		
Cost per 3 kg of raw fish (3*100.00)	300	1.62	88.2
Input (kg) (carcass recovery 3:1)*	3		
Labour Cost**	0	0	0
Salt	10	0.05	2.9
Transportation	30	0.16	8.8
Total variable cost (to process 3kg of fresh fish)	340	1.84	
Gross Profit (TR-TVC)	210	1.14	
Gross Profit/kg	210	1.14	
Average amount of dried fish produced/month (kg)	150		
Profit from dried fish processing in 1 month	31500	170.27	

* 3kg of raw fish is required to process 1kg of dried fish

** Opportunity cost of family labour is zero

Table 5: Profit of the different production volumes of dried fish

Production volume /per month	Average production (kg/month)	Net Income (Profit) per month (LKR)
Micro (less than 100kg)	34.36	7 215.60
Small (101-200 kg)	168.75	38 981.25
Medium (201-500kg)	250.00	63 000.00
Large (more than 501kg)	1050.00	286 650.00

Table 6: Economic analysis of Maldivé fish production

Description	Amount (LKR)	US\$	Cost as %
Price per kg of Maldivé fish	1000	5.41	
Total income (from 1kg of Maldivé fish)	1000	5.41	
Cost for 5kg of fresh fish (5*140)	700	3.78	91.8
Input (kg) (carcass recovery 5:1)*	5		
Labour Cost**	0		
Salt	7.5	0.04	1
Transportation	40	0.22	5.2
Firewood	15	0.08	2
Total variable cost (to process 5kg of fresh fish)	762.5	4.12	
Gross Profit	237.5	1.28	
Gross Profit/kg	237.5	1.28	
Average amount of Maldivé fish produced/month	265		
Profit per month	62 937.50	340.2	

* 5kg of fresh fish is required to process 1kg of Maldivé fish

** Opportunity cost of family labour is zero

Table 7: Profits of the different scales of the Maldivian fish production

Scale of Production	Average production	Net income (profit) per month (LKR)
/per month	(kg/month)	
Micro (less than 100kg)	38.86	9 229.25
Small (101-200 kg)	140.00	36 575.00
Medium (201-500kg)	305.53	87 076.05
Large (more than 501kg)	611.54	188 812.96

Table 8: Opportunities for women in decision making regarding fish processing

Description	Mean value	p-value	Wilcoxon Test value	Result
Decision making regarding; -the fish processing employment	1.02**	0.000	5.803	Greater opportunities for women than men to make decisions regarding the employment
-setting the selling price	0.37**	0.011	2.534	Equal opportunities for women and men to set selling price
-transport final product	-0.82 * *	0.001	-3.392	Lower opportunities for women than men to transport products to outside areas
-building market linkages with the buyers come to the yard	1.27**	0.000	5.695	Higher opportunities for women than men to build linkages with buyers came to the yard
-building market linkages with the outside market	-0.54 * *	0.039	-2.206	Lower opportunities for women than men to build up linkages with outside markets
Bargaining power for a raw fish price	-1.97 * *	0.000	-7.628	Much lower opportunities for women than men to bargain for the fresh fish price
Organizing capacity	0.72**	0.001	-3.437	Higher opportunities for women than men to organizing
Access to loan facilities	0.20	0.201	-1.278	Not significant
Access to training sessions	1.59**	0.000	-6.580	Very higher opportunities for women than men to access-training sessions
Access to new technology	0.27	0.097	-1.657	Not significant
Support from public and private officials	0.95**	0.000	-5.503	Higher opportunities for women than men to get support from officials
Support from fisheries community organizations	0.85**	0.000	-4.018	Higher opportunities for women than men to get support from fisheries community organizations

** Significant at 0.05% level

Table 9: Results of Access and Control Profile

Resources	Access (Marks out of 10)		Control (Marks out of 10)	
	Men	Women	Men	Women
Fresh Fish	5	5	10	0
Physical materials (Pans, baskets, etc.)	3	7	3	7
Firewood	0	10	0	10
Technology (Furnace)	5	5	5	5
Transportation	7	3	7	3
Market	7	3	7	3
Subsidies provided by the fisheries community organization	3	7	3	7