

Characterisation of the Fish Producing and Fish Processing Sectors in Mauritius

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Abstract

Since a few years, there is a focus on the expansion of the fish industry in Mauritius in view of its contribution in boosting the economic situation of the country. This study was undertaken to characterise the two main sub-sectors of this industry namely the fish producing and fish processing sectors. A survey was carried out in two phases: a desk review to identify the relevant companies and a mail survey to obtain the requisite details about them to enable their characterisation. The survey findings reveal that there are 14 fishing, 10 fish processing, 1 fish farming companies in Mauritius and 1 which is involved in both fishing and processing activities. Various other features like their number of employees, annual turnover, nature of activities (fishing or fish processing), market (local or overseas), state (chilled or frozen) in which the fish is sold and the range of fish products manufactured were determined. The companies were also classified in terms of 'small', 'medium' and 'large' based on their annual turnover. This preliminary survey provides essential background information for wider national surveys to be carried out.

Keywords: fish industry, characterisation, survey, seafood hub

**For correspondences and reprints*

INTRODUCTION

The need to diversify its economy has prompted the Mauritian Government to find new strategies to develop sectors other than the sugar, textile and tourist industries. With the loss of sugar subsidies due to reforms by the European Union and fierce competition from inexpensive textile producers elsewhere, Mauritius, has in recent years, invested in other fields to boost its economy. The information and communications technology sector and the seafood industry have emerged as new pillars. A new dimension has been given to the latter industry; the creation of a one-stop-shop to provide a platform where different government authorities can work in concert to promote Mauritius as a seafood hub (Board of Investment, 2006).

Fish and fish products are among the most internationally traded food commodities (Huss *et al*, 2003). Over the years total world fisheries production (both from capture and aquaculture) has increased from 118 million tonnes in the year 1998 to 132 million tonnes in 2003 (FAO, 2004). Huss *et al* (2003) have reported that developing countries provided about 50% of all the fish and fish products entering the global market in 2001. In fact, with an Exclusive Economic Zone of 1.9 million km², Mauritius as a maritime nation has a reasonable stock of various fish species (FAO, 2006). With much emphasis being placed on the development of the seafood industry, the Mauritian fish sector is expanding substantially. The production of fish has increased from 7800 tonnes in 2000 to 9500 tonnes in 2004 with total exports of fish and fish products being worth 3358 million rupees (Central Statistics Office, 2005).

Locally, the fish industry consists of two main sectors namely the fish producing (wild capture and aquaculture) and the fish processing sectors. Fishing activities not only cover coastal waters but extend as well to oceanic banks like Nazareth and Saya de Malha. Tuna fished by licensed purse seiners also constitutes an important part of the supply to the local market mainly for processing (Ministry of Fisheries and Marine Resources, 1995). In 1976, a major tuna canning plant, a joint venture between Mauritian and Japanese interests, was established (Ardill, 1986). Its products were geared mostly for export. At that time, the salted fish business was growing but techniques used were still primitive (Anon, 1975). As regards aquaculture, rearing fish in barachois started in the 1800s (Jehangeer and Chineah, 1983). Several projects were launched since then to develop this sector. However, due to lack of managerial skills and knowledge, the full potentialities of such an enterprise could not be exploited and production had been kept at non-economic levels (Ardill, 1986).

The Mauritian fish industry has evolved through the years. Nevertheless, there is a dearth of updated information on the structure and characteristics of this industry. Little is known on the size and the nature of activities of the companies involved in either fish production or processing in Mauritius. A characterisation of the fish industry can provide an overview of its scale and scope and its role in economic development through employment creation and contribution to the Gross Domestic Product. Besides, such a categorisation can provide guidance to those carrying out

surveys in these sectors on how to classify fish producing and processing companies for instance in terms of number of employees and/or other criteria.

Furthermore, a reliable classification of the companies will assist policy-makers and decision-makers in the government in the translation of laws into policies (Allal, 1999) which are intended for the different categories of businesses within the fish industry. In this respect, a study has been undertaken to characterise the fish producing and processing sectors in Mauritius. This paper presents the outcome of this undertaking and attempts to provide a body of knowledge on the local fish industry.

METHODOLOGY

In this research, a survey was done in two phases. The first phase involved a desk review in order to obtain a list of companies involved in fish production and fish processing in Mauritius followed by a telephone screening to identify those companies falling within the population frame. The second phase consisted of a mail survey to obtain details about the latter companies to enable their characterisation.

PHASE 1

Obtaining the list of companies engaged in fish processing, fishing and fish farming

A list of fish producing (fishing and fish farming) and fish processing companies in Mauritius was compiled using information from various sources which are as follows:

- Ministry of Agro-industry and Fisheries including Albion Fisheries Research Center and La Ferme Fish Farm
- Mauritius Chamber of Commerce and Industry
- Board of Investment
- The Small Enterprises And Handicraft Development Authority
- Central Statistics Office

The list comprised a total of 70 companies.

Telephone screening

A telephone screening was carried out to ascertain the field of activities in which the companies operated and whether they were still in business. A standard procedure was used to determine if the companies fitted the selection criterion which was that the companies needed to be operational at the time of the survey and engaged in either fish production or fish processing for commercial purposes. Of the 70 companies contacted, 33 did not meet the selection criterion and these were individuals mostly involved in domestic fish farming for personal use. Two

companies were unobtainable and nine were still not operational. Subsequently, a record of companies was developed (Table 1).

Sector	Number
Fishing at sea	15
Aquaculture (fresh water and at sea)	1
Fish processing	10

Table: Number of companies in each sector

Since there was only one company involved in aquaculture, there could be no protection of confidential information about the business when the results would be reported. Therefore, the fish farming company was omitted from the survey.

PHASE 2

Mail survey

In order to characterise these companies by size and nature of activities, a mail survey was initiated in April 2006. A cover letter explaining the purpose of this investigation was made and a structured, self-administered questionnaire was constructed as well. Through the letter, the recipients were assured that all information gathered would be kept in the strictest confidentiality and that the company would remain anonymous. The survey instrument was pre-tested with five companies and modifications entailed removing one irrelevant question and altering the options to two questions in order to obtain clearer responses.

The questionnaire comprised two sections and the information sought in each section is depicted in Table 2.

Section A	Contact details
Section B	Number of employees and annual turnover of company, main field of business activity, form in which fish is sold, fish products manufactured and market for fish and fish products

Table 2: Information sought in questionnaire

The cover letter and the questionnaire were posted to each company giving them a period of two weeks to either mail or fax the questionnaire back. A stamped, self-addressed return envelope was also enclosed. The response rate was 36 % (9 out of 25). A telephone follow-up was done for those who did not reply after which the remaining 16 questionnaires could be filled. However, two companies were

reluctant to give their annual turnover even after explaining that all details would be kept confidential.

Data analysis

Frequency data were produced using the Statistical Package for the Social Sciences (SPSS), version 14. Pie and bar charts were generated using Microsoft Excel.

RESULTS

Population profile

From Table 3, it is observed that the majority of companies (22) employ more than 10 employees and most of the companies (11) have an annual turnover of 10 to 50 million rupees.

Number of employees	Less than 10	10 to 50	More than 50
Number of companies	3	10	12
Annual turnover (in million rupees)	Less than 10	10 to 50	More than 50
Number of companies*	6	11	6

Table 3: Number of employees and annual turnover of companies

* This information is not available for two companies which had declined to provide such information.

Figure 1 illustrates that almost half (14) of the companies surveyed are involved in fishing at sea while fish processing plants amount to 10.

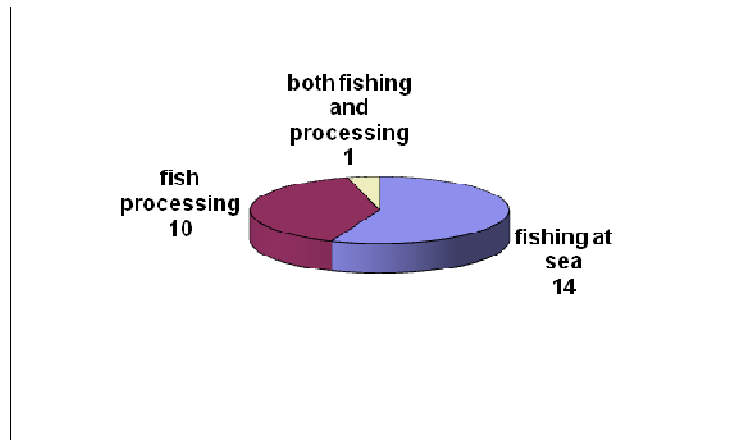


Figure 1: Main field of business activity of companies

It is important to note that five companies are involved in other activities besides fish processing or production and this is portrayed in Table 4.

Other activities	Number of companies
Importation and distribution of fish to hotels	1
Manufacturing of chicken, beef and pork products	1
Food catering	1
Processing of mutton and beef and distribution of frozen vegetables	1
Sale of frozen, fresh and grilled chicken	1

Table 4: Other activities in which five companies are involved

Table 5 presents the period during which the companies in the fish producing and fish processing sectors came into operation. It is worthwhile noting that one company, engaged in both fishing and processing, has been running since eighty years (established in 1927). It is only in 2002 that an export-oriented aquaculture company started its commercial activities.

Period of establishment	Number of companies	Business activity
Before 1980	1	Both fishing and fish processing
	1	Fishing at sea
1980 to 1990	4	Fish processing
	6	Fishing at sea
1991 to 2000	4	Fish processing
	5	Fishing at sea
2001 to 2005	2	Fish processing
	2	Fishing at sea

Table 5: Period of establishment of companies

Most of the companies (8) involved in fish production sell their harvested fish in the chilled state and there are only 5 companies, which fish at sea, that commercialise frozen fish (Figure 2). Two companies sell both frozen and chilled fish.

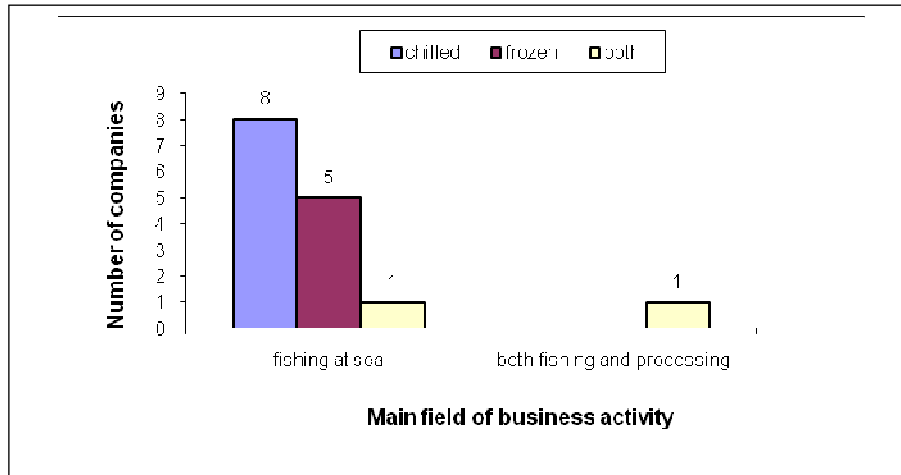


Figure 2: Form in which harvested fish is sold

Figure 3 depicts that the fish of 4 companies is meant to be exported exclusively and 3 businesses sell their fish both locally and overseas. It can also be observed that the fish harvested by 8 companies is intended only for the local market.

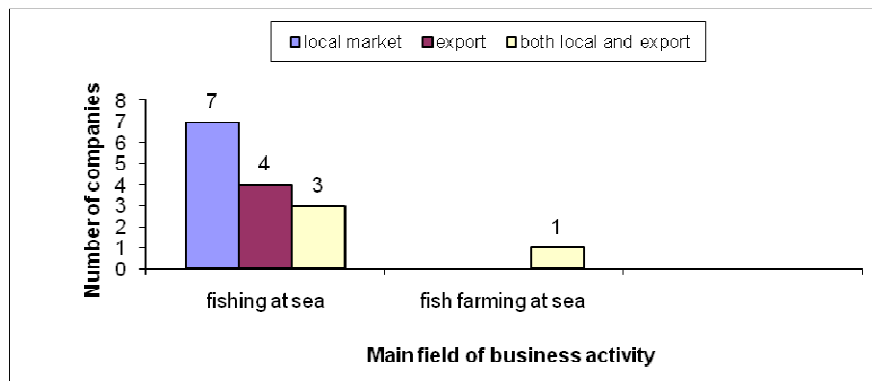


Figure 3: Market for which harvested fish is intended

The different types of products which are manufactured by the companies engaged in fish processing are presented in Table 6. It is noteworthy that among these 12 companies, 3 produce salted fish.

Products manufactured	Number of companies
Breaded fish fillets, fish fingers, fish nuggets	1
Canned tuna	1
Fish balls	1
Fish fillet in 'barquettes'	1
Fresh loins of swordfish, tuna, marlin, mahimahi	1
Gutted, chill-packed fish	1
Precooked frozen loins, chunks and flakes, canned belly and chunks of tuna	1
Salted fish	3
Pre-fried salted fish in flakes	1
Smoked marlin, tuna, swordfish, raw fillets and steaks of marlin, tuna, mahimahi, mackerel	1

Table 6: Type(s) of product manufactured by fish processing companies

Figure 4 shows that only 1 fish processing company exports all its products and while 6 businesses sell their products on the local market only, the products of 4 companies are meant both for the local and overseas market.

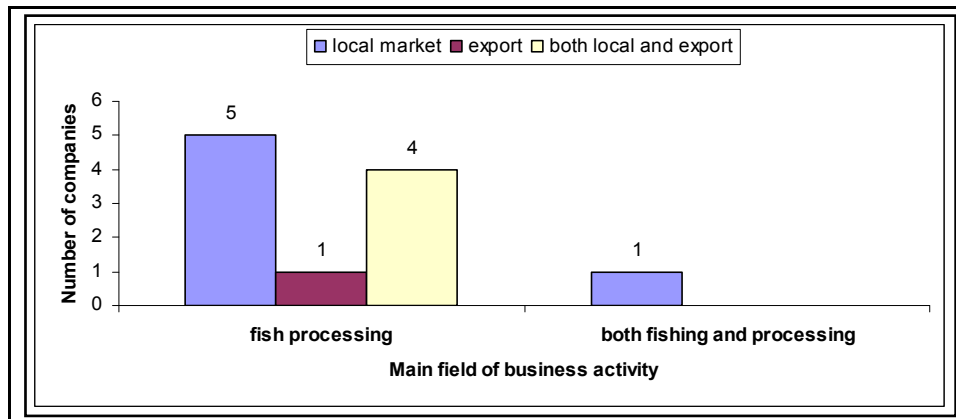


Figure 4. Market for which processed fish is intended

Classification of the companies

The SEHDA Act (2005) defines a ‘small enterprise’ as one having an annual turnover not exceeding 10 million rupees. For the purpose of this study, this definition for ‘small’ has been used as a baseline to classify the companies in terms of size. Consequently, the following range of annual turnover (Table 6) has been employed to categorise the companies.

Annual turnover (million rupees)			
Company classification	Small	Medium	Large

Table 6. Classification of companies based on annual turnover

Referring to Table 3, it is found that there are 6 small-, 11 medium- and 6 large-sized companies in Mauritius involved in either fish production or fish processing. Two remain unclassified.

DISCUSSION

The outcome of this study has facilitated the classification of the fish producing and fish processing companies in Mauritius into small, medium and large. Such a classification is important to match up other studies that have been conducted in the same field. It has been reported that the size of companies is frequently measured in terms of the number of employees and the turnover or the related volume of sales (International Labour Organisation, 2000). Nonetheless, a review of the definitions available to depict ‘small’, ‘medium’ and ‘large’ locally and internationally revealed that these definitions differ from one country to another. For example, in the European Union, a small enterprise is defined as one which employs fewer than 50 persons (Official Journal of the European Union, 2003) whereas in Mauritius a small enterprise is described as one having less than 10 employees (SEHDA Act, 2005).

Initially it had been decided to categorise the companies based on the two criteria; number of employees and annual turnover. However, upon analysing the data generated for these two variables (Table 3) it was observed that the values were sparsely distributed such that the use of these two criteria jointly was rather difficult. Therefore, the company’s annual turnover as sole criterion of categorisation was taken into consideration as it reflects the volume of sales and/or scale of production. Since, locally, the definitions of ‘medium’ and ‘large’ are unavailable, the companies were classified (Table 6) using the definition for ‘small enterprise’ as stipulated by the SEHDA Act (2005) based on their annual turnover. The inadequacies identified highlight the need for a more reliable methodology to classify companies in Mauritius.

The range of products manufactured by the fish processing sector (Table 6) shows that there is a commitment to produce value added fish products. Although at present there are only ten fish processing companies (Figure 1), a review of the local press and personal communication with key players in this industry have revealed that the construction of new processing facilities are in the pipeline. Two export-oriented plants are ready to start their operations but are still waiting for approval from the concerned authorities to export. While one will be specialised in processing both pelagic and demersal fish into fillets and loins, the other one will manufacture smoked fish and other fish products. Two fishing companies are also busy in the construction of their respective processing plants.

In response to the depleting stocks of wild fish due to overexploitation of the ocean's reserves, the practice of aquaculture (production of fish under controlled conditions) has gained momentum around the world. Aquaculture offers various advantages notably maintaining a steady supply of fish, production of fish of uniform size and quantity, increased growth rates, better feed conversion and so on (Harvey, 2004). With the promotion of the seafood industry, attention is being paid to the development of aquaculture sector as well. Actually, there is one company in Mauritius engaged in the culture of fish at sea in the south of the island which is itself diversifying its activities in the setting up of a fish processing factory and in identifying other prospective sites for fish farming.

In addition, a Master Plan to develop the sector of aquaculture in Mauritius is being designed. Until now, twenty sites have been identified around the island to conduct fish farming (Chabrut, 2007). Although aquaculture offers numerous benefits especially in ensuring a constant availability of fish, the management and the sustainable development of fisheries resources within its Exclusive Economic Zone must be a priority for the Mauritian Government. In order to combat illegal, unreported and unregulated fishing, the Indian Ocean Commission (IOC) was set up under the aegis of the Food and Agriculture Organisation. The main objective of the members (Comoro Islands, Réunion Island, Mauritius and Seychelles) of the IOC is to adopt and implement surveillance strategies to control fish stocks in the region, hence, the importance of sharing of information between member countries. One of the control measures is to prevent the transshipment of any merchandise or equipment at sea and to restrict access to these black-listed vessels to the port (Chabrut, 2007). Another laudable initiative was the setting up Fish Aggregating Devices (artificial floating rafts anchored at different depths) at sea in the mid 1980s to attract migratory fish like tuna, mahimahi and marlin so that they can be more easily caught (Ardill, 1986).

Five out of ten fish processing companies and eight out of fourteen fish producing companies export their fish/fish products (Figures 3 and 4). In order to be able to export, local companies need to comply with the regulations of the intended country of export otherwise this can impede trade (Catsberg and Kempen-Van Dommelen, 1990). For instance, the European Union has developed rules and regulations in order to guarantee the safety of fish and fish products by ensuring that countries exporting fish products to the European market abide by the European Union legislation (European Commission, 2006). In this perspective, failure to attain international food safety standards can be detrimental to exporting countries like Mauritius especially with the seafood hub being very high on the Mauritian Government's agenda. This emphasises the need for Mauritius to align its legislative requirements regarding fish and fish products with those of the European Union to promote international trade.

CONCLUSION

The findings from this study shed light on the characteristics of the 25 companies which actually form part of the fish producing and processing sectors in Mauritius. The different features of these companies like their number of employees, annual

turnover, business field, market for their fish/fish products and the range of products manufactured were identified. This database greatly improves upon existing data on the fish industry, which is very sparse. The annual turnover of the companies has been used to classify the companies in terms of size. However, the difficulty in obtaining the appropriate criteria to categorise these companies highlights the need for a more reliable classification system in Mauritius.

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REFERENCES

ALLAL, M. (1999). *Micro and small enterprises (MSEs) in Thailand - definitions and contributions.* Industrial Labour Organisation. Available from:

<http://www.ilo.org/public/english/employment/ent/papers/thai6.doc>

[Accessed 12 April 2006]

ANON (1975). Present state of fishing economy and recommendations for development of industrial fishery. Technical Economic Report.

ARDILL, J.D. (1986). *Current status of fisheries in Mauritius.* Food and Agriculture Organisation of the United Nations. Available from:

<http://www.fao.org/docrep/field/279579.htm> [Accessed 12 April 2006]

BOARD OF INVESTMENT (2006). *The seafood hub.* Available from:

<http://www.efreepport.com/default.aspx> [Accessed 12 April 2006]

CATSBERG, C.M.E. & KEMPEN-VAN DOMMELEN, G.J.H. (1990). Food legislation, hygiene and health. In Food Handbook, pp 28-30. (Ed I.D. MORTON). Ellis Horwood, London, U.K.

CENTRAL STATISTICS OFFICE (2005). *Mauritius in figures.* Ministry of Finance and Economic Development, Mauritius. Available from

<http://www.gov.mu/portal/sites/ncb/eso/mif04/mif04.pdf> [Accessed 26

January 2006]

CHABRUT, L. (2007). Des ressources sous surveillance. L'Eco austral 207, p 70.

EUROPEAN COMMISSION (2006). *Main food hygiene legislation for fisheries product.* Available from

http://europa.eu.int/comm/fisheries/doc_et_publ/factsheets/legal_texts/legal_en.htm [Accessed 16 February 2006]

- FAO (2004). World situation of fishings and the aquiculture. Food and Agriculture Organisation of the United Nations Available from <http://www.fao.org/docrep/fao/007/y5600f/y5600f01.pdf> [Accessed 10 September 2006]**
- FAO (2006). FAO fishery country profile – the Republic of Mauritius. Food and Agriculture Organisation of the United Nations. Available from <http://www.fao.org/fi/fcp/en/MUS/profile.htm> [Accessed 17 May 2007]**
- HARVEY, D.J. (2004). U.S. Seafood market shifts to aquaculture. Economic Research Service, United States Department of Agriculture. Available from <http://ers.usda.gov/AmberWaves/April04/Findings> [Accessed 16 December 2006]**
- HUSS, H.H., ABABOUC, L. & GRAM, L. (2003). Assessment and management of seafood safety and quality. FAO Fisheries Technical Paper. No. 444. Rome, FAO. Available from <http://www.fao.org/docrep/006/y4743e/y4743e03.htm> [Accessed 23 January 2006]**
- INTERNATIONAL LABOUR ORGANISATION (2000). SMEs and their employment pattern. Available from <http://www.ilo.org/public/english/safework/papers.htm> [Accessed 12 April 2006]**
- JEHANGEER, M.I. & CHINEAH, V. (1983). Status of mariculture in Mauritius. In Proceedings of seminar on marine fisheries development in Mauritius, p 77. (Ed S. BHOOJEDHUR).**
- MINISTRY OF FISHERIES AND MARINE RESOURCES (1995). The fisheries and marine sectors of Mauritius-an overview.**
- OFFICIAL JOURNAL OF THE EUROPEAN UNION (2003). Commission recommendation concerning the definition of micro, small and medium-sized enterprises. Available from <http://www.sustainable-design.ie/EU-SMEs.pdf> [Accessed 23 February 2006]**
- SEHDA ACT (2005). The small enterprises and handicraft development authority act. Ministry of Small Enterprises, Co-operatives, Handicraft and the Informal Sector. Available from <http://www.gov.mu/portal/goc/industry/file/sehda.doc> [Accessed 27 January 2006]**