

BIBLIOGRAPHY

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ABSTRACT

This study was conducted to provide an overview of fish industry in fishing areas/barangays of Sual, Pangasinan.

There are six coastal barangays in Sual, Pangasinan involved in fishing industry both for marine and inland fish. Among the six barangays, Poblacion had the highest in terms of production and unloading.

Four supply chain maps were drawn; the supply chain map for inland fish, for marine fish, for the PADFC (fishing company) and fish processors. Actors identified in the supply chain maps include the traders (fish truckers, wholesalers, wholesaler-retailers and retailers), the fishermen (inland and marine fish), fish processors and consumers.

As to the product flow, the inland fish, marine fish, and fishing company supply the traders. The traders include the wholesaler from the Sual and other areas of Pangasinan and from other provinces including Metro Manila. From the wholesalers, the fish are delivered to wholesaler-retailers and retailers and from retailers to consumers. Except the fishing company, the fishermen also supply the consumers. The processor supply the wholesalers and retailers in the Sual and others areas and sells also directly to consumers.



Price is dictated by the traders/buyers during peak or if there are plenty of catch or harvest, but when quantity of supply is low the fishermen can dictate the price. Mode of payment is usually cash.

Problems encountered by fishermen are low price dictated by the buyer/traders, high price fluctuations, and bad weather. Other problem encountered by marine fish fishermen is the too diversified catch yet small volume of fish catch. Problems encountered by traders are high market fees, lack of government support to improve or establish a market center for fish price fluctuation and mixture of fresh and spoiled fish which is commonly experienced by retailers. Problem of processors were lack of training for new technology on fish processing, high market fees, limited outlet, and insufficient and seasonality of raw materials.

It is there suggested that the government should support the industry by establishing a trading center for fish in the area, BFAR should provide technology for processing and even new technologies on inland fishing.



RESULTS AND DISCUSSION

Overview on the Fish Industry in Sual, Pangasinan

Volume unload.

The province of Pangasinan is the major producer of milkfish (locally called “bangus”). Dagupan, specifically is known of their Bonuan bangus, which is produced in barangay Bonuan of the Dagupan. Now in the market, seller of bangus always indicate that the bangus is Dagupan bangus and commands a higher price than those coming from other places such as Metro Manila and other bangus producing areas, except for La Union bangus because this also has a higher price, sometimes higher even than the Dagupan bangus. The municipality of Sual, is also one of the major milkfish producers in Pangasinan, aside from the small scale fishing, fishing companies are also found in the area like the PCP Aqua Farm Development Corporation (PAFDC). There are 58 Bangus cages that is owned by the PAFDC company located in the sea near Hundred island. There are 19 barangays in Sual, 6 of these are coastal barangays and all these are engaged in domesticated fish production where bangus is their major product but also produces other inland fish such as “bia”/”bulasi”, “bunog”, “tilapia”, shrimps, mudfish, catfish, crabs and “talaba” or oyster. The 6 barangays include: Baquioen, Baybay Norte, Cabalitian, Pangascasan, Macaycayawan and Poblacion, As shown in Table 1, Poblacion has the highest production, followed by Macaycayawen, The barangay with smaller volume of fish unload is barangay Pangascasan.

Kinds of inland fish and marine fish caught. Inland fish are those grow in fresh water or even in coastal area, in fish pond or cages, taken cared or domesticated. All the inland fish producers produces milkfish and Bia or Bunog, Bulasi, shrimps and crabs because these



are fish species that could be mixed with milkfish in the fish ponds or cages. Other, fish that fishermen grow are tilapia, mudfish and oyster or “Talaba” in separate cages. These are produced by small scale fishermen. PAFDC is concentrated on the production of milkfish. Some households in the area are also into processing of boneless bangus but only on small scale for the local market and for home consumption.

Aside from inland fishing, the residents in the area are also into marine fishing. Marine fish are those that grow in the sea/seawater Marine fish caught include “Espada”, “Labahita”, “Galungong”, “Dilis”, “Tamban”, Tuna”, “Sandatan”, “Daraw”, “Hasa”. “Balake”, “Bisugo”, “Sapsap”, “Matambaka”, “Dalag baybay”, “Lapulapu”, “Tanguague”, “Talakitok”, “Babaldan” and Alomahan (Table 2). These kind of fishes can be caught all year round but there are months or season where these are abundant. Volume of catch however is low during the rainy season.

Some households in the area are into fish processing dried fish usually sold to neighbours, retailers in local markets or if there are plenty to traders from Dagupan City. Fish used for dried fish processing is the “dilis” and “Tamban”. Dilis is also processed into fermented fish. Usually, these individual do processing if the price is low because of high supply or catch. Some of the fishermen also do processing but only when catch is plenty and price offered by buyers is low. Fish fermentation (production of fish sauce) is also done by some households but for home consumption.

Supply Chain Maps

The supply chain map of the different actors in the chain is presented in Figure 1 - 4. One of the limitations in this study is that respondents are hesitant to answer some of the questions asked especially on the part of the fish company and traders.



Table 1. Volume of fish unloadings in the different barangays of Sual , Pangasinan (in MT)

YEAR	BARANGAYS							
	BAQUIOEN	PERCENT CHANGE	BAYBAY NORTE	PERCENT CHANGE	CABALITIAN	PERCENT CHANGE	PANG ASCAS AN	MACAYCAN
2004	15		16		21		9	53
2005	26		18		23		11	67
2006	24		9		19		8	46
2007	26		12		18		10	33
2008	21		16		17		13	61
2009	27		21		24		16	86
AVER	23.17		15.33		20.33		11.17	57.67
AGE								

Source: BFAR, Sual, Pangasinan, 2010 Report



Table 2. Kinds of fish catch according to source in Sual, Pangasinan

SOURCE/KIND OF FISH	FREQUENCY	PERCENTAGE
Inland	(N =25)	
Milkfish	25	100
“Bia/Bunog”	25	100
Crabs	25	100
“Bulasi”	25	100
Shrimps	25	100
Mudfish	10	40
“Tilapia”	8	32
“Talaba” or Oyster	6	24
Marine		
Dilis	21	100
Tamban	21	100
Espada	18	86
Bisugo	18	86
Galunggong	17	81
Balake	13	62
Sandatan	13	62
Daraw	12	57
Hasa	11	52
Sapsap	9	43
Labahita	9	43
Lapu-lapu	8	38
Dalag baybay	7	33
Tuna	7	33
Matambaka	6	14
Tanguague	4	19
Alomahan	3	14
Talakitok	1	5
Balanban	1	5

*Multiple response



The inland fishermen supply the fish to the local market traders (wholesaler, wholesaler-retailer and retailer in Sual) and other traders or fish truckers from other areas/provinces (Dagupan, Tarlac and other areas in Pangasinan. The traders supply to retailers which is the direct link to the ultimate consumer. The fishermen also sell directly to consumers especially to his neighbours and to retailers because some fishermen have “suki” or regular buyer (Figure 1).

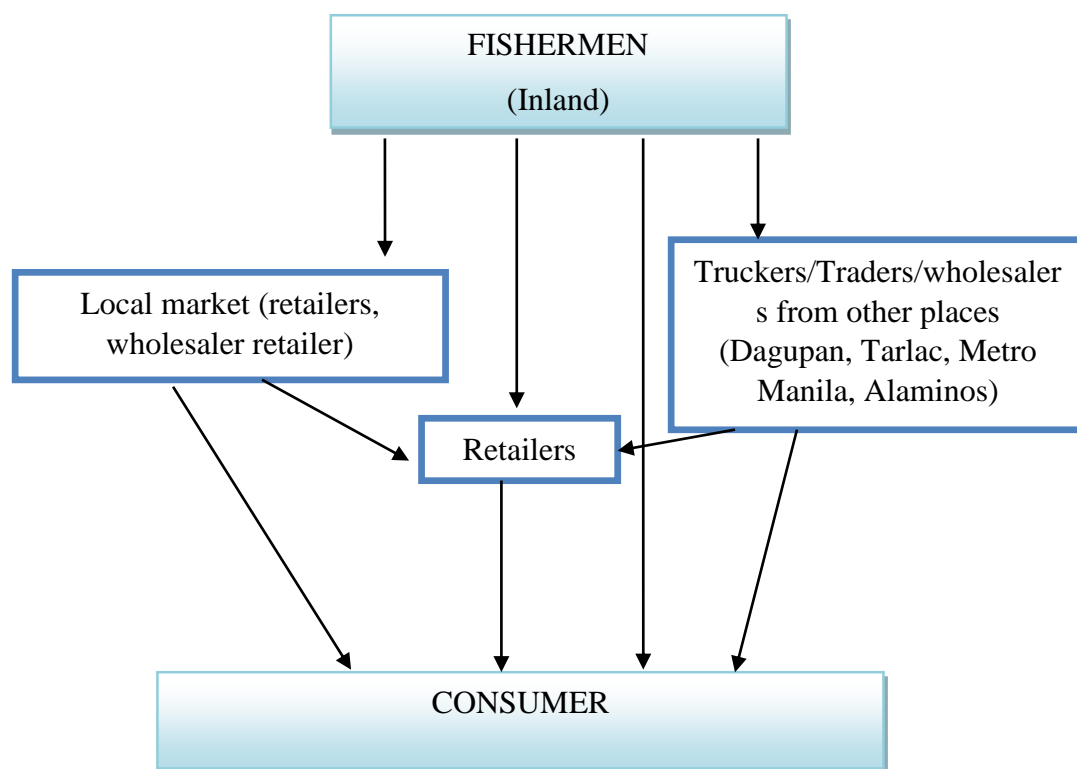


Figure 1. Supply chain map for inland fish

The marine fishermen supply his catch to the local market traders (wholesaler, wholesaler-retailer and retailer) and to traders or fish truckers from other places if there are plenty of catch. If there are plenty of sapsap, dilis, espada and tamban that is caught, he supplies to



the local processors especially if size of the fish is small. From the traders it goes to the retailers then to the consumers (Figure 2).

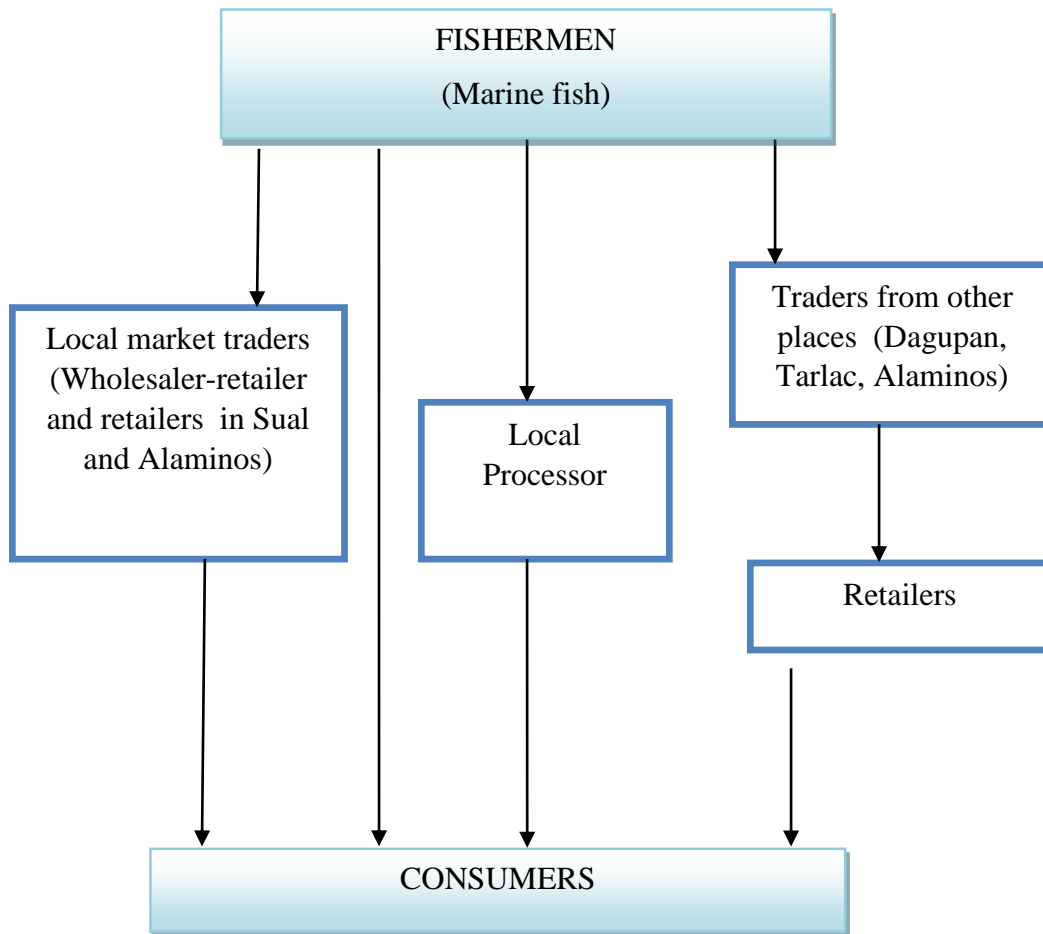


Figure 2. Supply chain map for marine fish

The fish company have an average production of 2,000 kilogram of milkfish every week so he targets to fish trucker as buyer of his product. The trucker delivers the fish to the different market of North Luzon like Tarlac and Metro Manila and supplies to the retailers. The company also supplies the Dagupan wholesaler and from Dagupan it is distributed to the different areas of Northern Luzon like Baguio City and other areas in the

Cordillera, to La Union and to the Ilocos region. The company also supply the local market in Sual and Alaminos (Figure 3).

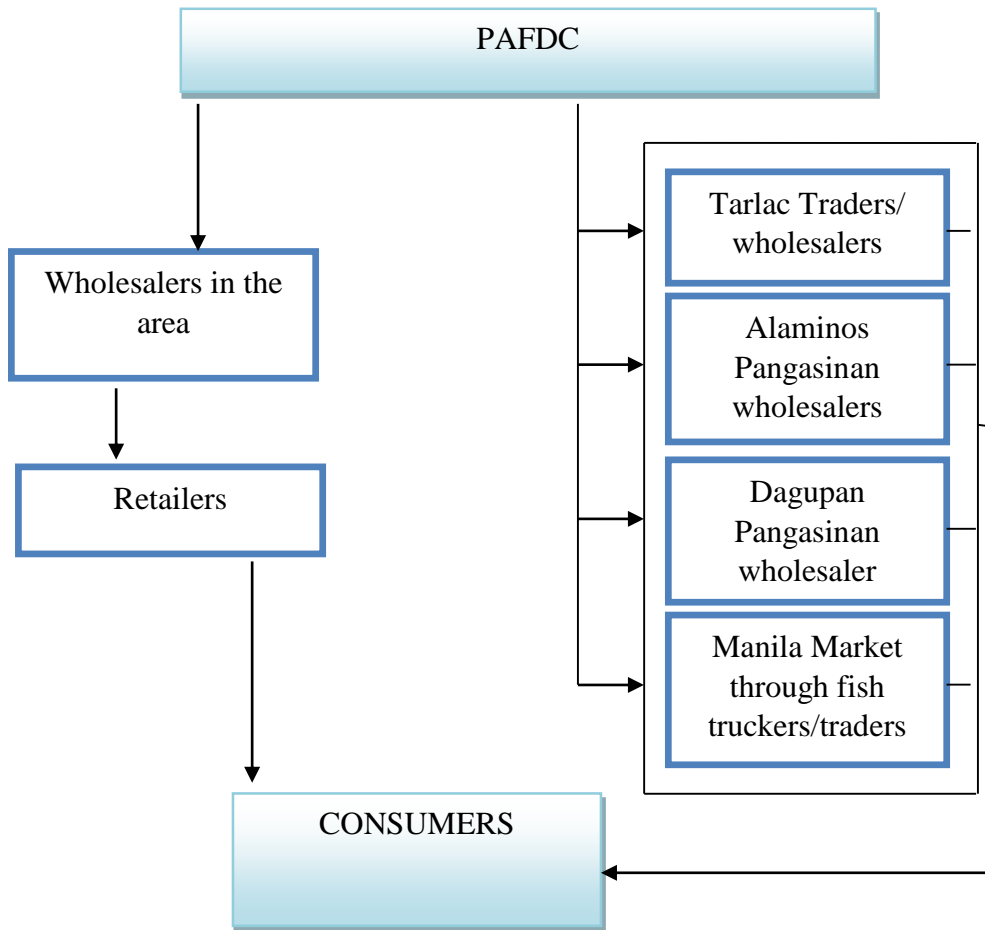


Figure 3. Supply chain map for fish company (PAFDC)

The processor gets raw material from wholesaler if the price is low, usually this is when supply is high. The processor also gets supply of raw material from the fishermen (both inland and marine). Processing is only done when there is abundant catch or high supply, because this is also the time when price is low. The processed fish is supplied to dried fish wholesaler in local market or even in other areas or provinces,



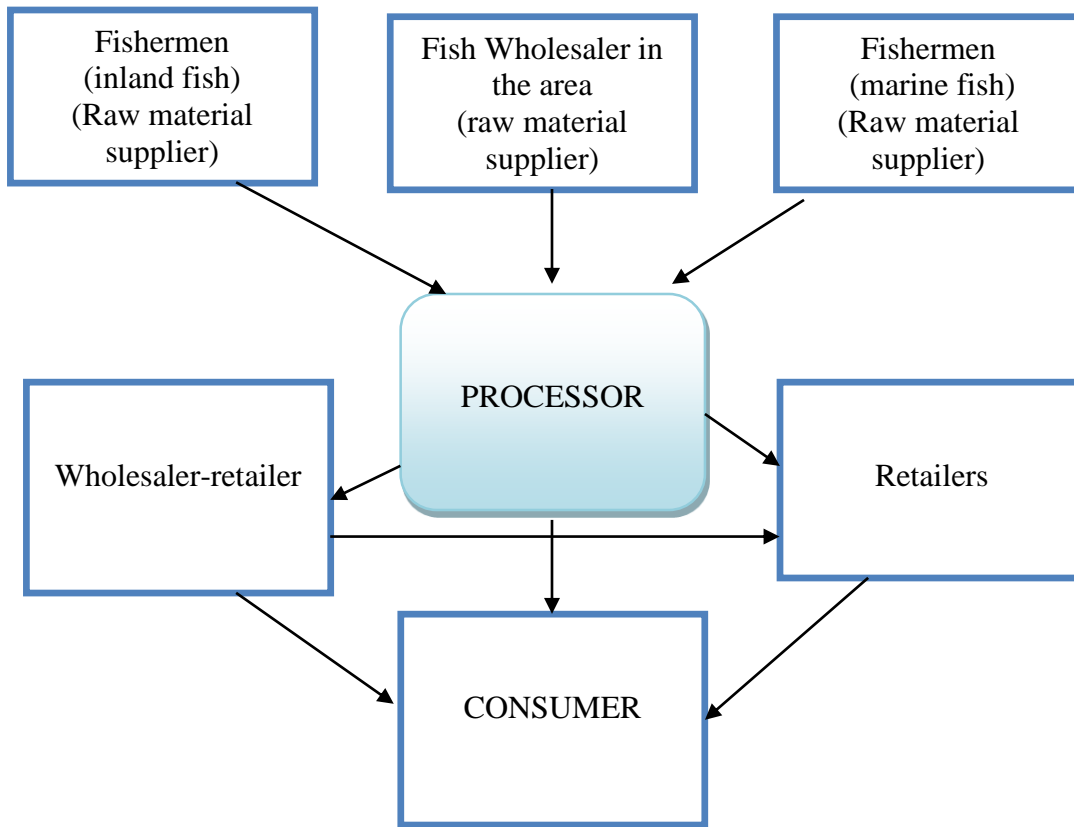


Figure 4. Supply chain map of processor

Actors in the Supply Chain

The actors indentified in the market chain were the respondents of the study. Actors identified were the fishermen (both for inland and marine fish), the traders (includes the fish truckers, wholesalers, traders from other areas and retailers), the fishing company especially the collector of company, the processors and the consumers.

Of the total 93 respondents, 27% were into inland fishermen/inland fishing, 23% were marine fishermen, 16% were traders, 6% were processors. 27% were consumers and 1% fish company.



Inland fishermen are individuals who grow or produce fish in ponds or in fish cages and marine fishermen are individuals who catch fish from the sea.

Fish truckers are actually wholesaler of fish; they buy fish from the fishermen and deliver to the different markets, either sells to wholesaler, wholesaler-retailer or retailers in market destination.

Wholesaler-retailers are those who buy fish in bulk from fish trucker and supply the retailers or sell also to consumers. Sometimes the wholesaler buys directly from fishermen. Some local wholesalers and even retailers get supply directly from fishermen. Retailers are the direct link to consumers and sell fish in small quantity to household consumers and even eateries and restaurants. Wholesalers of fish in Sual are usually from Dagupan also in Pangasinan.

The PAFDC is a fishing company owning about fifty eight large fish cages, growing milkfish and sell to fish truckers supplying the different markets in Northern Luzon such as Tarlac, Nueva Ecija, and Metro Manila markets and in also in Pangasinan.

Table 3. Supply chain actors

ACTORS	FREQUENCY	PERCENTAGE
Inland fishermen	25	27
Marine fishermen	21	23
Traders	15	16
PAFDC (fish company)	1	1
Processors	6	6
Consumers	25	27
TOTAL	93	100



Profile of Actors in the Chain

Age of respondents ranged from 15-to above 45 years old, and most ranged from 15 to 45 years old. One processor and 2 of the consumers interviewed are below 15 years old. Result shows that most of the respondents are young to middle aged.

Most of the fishermen interviewed were male and most of the traders and processors were female. This shows that in trading female outnumbered male. Majority of the consumers interviewed were female. Most of the actors in the supply chain were married.

As to educational attainment, most of the respondents interviewed were secondary/high school graduate. There were few of the traders, fishermen, processors who have reached college and have finished vocational course. One of the processor has not attended formal education.

On the number of years in fishing, trading and processing, years of experience ranged from 1 to 25 years among the fishermen. One is more than 25 years of experience. Result implies that majority of the respondents have already enough experience in fishing. The trader respondents have 1 to 15 years experience in fish trading. Among the processors, 50% of the respondents have 1 to 5 years experience and 50% have 6-10 years experience in fish processing.

On the major source of income all the fishermen mentioned fishing as their major source of income, all the traders interviewed mentioned fish trading as their major source of income while for the processors, 67% mentioned fish processing as major source of income and 33% mentioned that fishing is their major source of income. Thus, it shows that aside from fishing these are also into fish processing and some their fish catch is processed especially when price of fish is low. A larger number of the consumer respondents are



employees while some are also engaged in fishing and processing and sari-sari store owners.

Table 4. Profile of chain actors/respondents

PARTICULAR	INLAND		SEA FISHING		TRADER		PROCESSOR		CONSUMER	
	F	%	F	%	F	%	F	%	F	%
Age (years)										
Below 15	-	-	-	-	-	-	1	17	2	8
15-30	10	40	9	43	8	53	2	33	8	32
31-45	12	48	9	43	6	40	3	50	10	40
Above 45	3	12	3	14	1	7	0	0	5	20
TOTAL	25	100	21	100	15	100	6	100	25	100
Gender										
Male	23	92	20	95	4	27	2	33	12	48
Female	2	8	1	5	11	73	4	67	13	52
TOTAL	25	100	21	100	15	100	6	100	25	100
Marital status										
Single	8	32	6	29	2	13	0	0	6	34
Married	17	68	15	71	12	80	5	83	15	60
Widow	0	0	0	0	1	7	1	17	4	16
TOTAL	25	100	21	100	15	100	6	100	25	100
Educational attainment										
Elementary	2	8	4	19	1	7	1	17	2	8
Secondary	20	80	14	67	10	67	2	33	20	80
College	2	8	0	0	2	13	2	33	2	8
Vocational	1	4	3	14	2	13	0	0	1	4
No formal education	0	0	0	0	0	0	1	17	0	0
TOTAL	25	100	21	100	15	100	6	100	25	25
No. of years in fishing, trading and processing										
1 – 5	3	12	4	19	8	53	3	50	-	-



Table 4. Continued ...

PARTICULAR	INLAND		SEA FISHING		TRADER		PROCESSOR		CONSUMER	
	F	%	F	%	F	%	F	%	F	%
6 – 10	8	32	3	14	3	20	3	50	-	-
11 – 15	9	36	4	19	4	27	0	0	-	-
16 – 20	2	8	6	29	0	0	0	0	-	-
21 – 25	3	12	3	14	0	0	0	0	-	-
Above 25	0	0	1	5	0	0	0	0	-	-
TOTAL	25	100	21	100	15	100	6	100	-	-
Major source of income										
Fishing	25	100	21	100	-	-	2	33	4	16
Processing	-	-	-	-	-	-	4	67	3	12
Store	-	-	-	-	-	-	-	-	6	24
Fish trading	-	-	-	-	15	100	-	-	-	-
Employee	25	100	21	100	15	100	6	100	12	48

Role, and Functions of Supply Chain Actors

The fishermen grow inland fish in fish ponds or in fish cages or they catch fish from the sea and these are supplied to traders for distribution to the local market or to other areas like the municipalities in the province of Pangasinan and other cities like Baguio and Tarlac City and even up to Metro Manila area. The fishermen also supply the processors of raw materials (fish). The fishermen are price takers, accept what is dictated by the traders but in some cases negotiations on price is done especially if catch or supply is low. In this case, the fishermen can also dictate the price.

The processors processed fish such as boneless bangus, dried fish/ “tuyo” and fermented fish (fish sauce) and supply their products to the local retailers and if volume



produced is high they sell to wholesalers. Processors are also price takers but if supply is low they also do negotiations or dictate price to traders.

The traders include the fish truckers from Manila area, wholesalers from Tarlac and Dagupan and other markets within the province of Pangasinan. The wholesalers supply the retailers. There are also instances that truckers supply the retailers and some retailers also directly buy from the fishermen. Traders also include the retailers from the different markets. The retailers are the direct link to the consumers.

The private fishing company. The biggest company in Pangasinan involved in fish production especially on milkfish is PAFDC. This company has the widest fish cage in Sual, Pangasinan and supplying fish traders from other provinces including Pangasinan.

The consumers are the households which is the final destination of the fish, or the end of marketing. Consumers also include the institutional buyers like restaurants and eateries who buy fish, cook and serve/sell to their customers.

Table 5. Role and functions of the different actors

CHAIN ACTORS	ROLE	FUNCTION
Fishermen (inland and marine)	<ul style="list-style-type: none"> -grow inland fish in ponds and cages -catch fish from the sea -supply catch to traders (wholesalers, retailers,) - sell fish also to consumers 	- negotiate to prospect buyers
Traders	<ul style="list-style-type: none"> - Buy fish from fishermen - Supply fish to other wholesalers, and retailers - Transport the product to market destination 	<ul style="list-style-type: none"> -Packed fish, add ice (to preserve freshness) and see to it that the fish will reached market destination as fresh as possible. -Negotiate with prospect buyers -display products



Table 5. Continued ...

CHAIN ACTORS	ROLE	FUNCTION
	-	-influence buyers on choices
Processor	-Buy fish from the fishermen -process fish like boneless bangus and deliver/sell to retailers in the local market or in Dagupan City	-Negotiate with buyers
Fish company	-Produce fish for market in Pangasinan and other places of Northern Luzon	-Deliver products to market destinations -
Consumers	-end users of the product	-choose preferred product based on quality –freshness and price

Logistic in Production and Marketing

Milkfish is grown in fish cages while other inland fish are grown in fish ponds. Others catch fish from the sea. Production in fish pond and cages is more stable than fishing in the sea because there are instances that fishermen are not lucky to have more catch not like in inland fishing that if its harvest time then they just harvest so in order to have a regular continuous production they should production program.

Marketing of fish is daily, the company harvest almost daily, fishermen of marine fish go fishing once a week and there are others who go every other day.

Marketing outlets of fishermen and the fishing company. The major market outlet of the fishermen are the traders going to the area and even the local traders including retailers.

The company supply the truckers and even local traders in the place and other traders from Northern Luzon. The truckers supply the Metro Manila market. The fishermen also supply some processors especially when supply when plenty of harvest or catch.



Price determination and price received. Price is often dictated by the traders and this would depend on the supply and demand situation. For the company according to the collector the price is almost fixed but if supply in the market is high they also reduce the price. For marine fish, most often the price is dictated by the fishermen especially if catch is low. Price is negotiated between the fishermen and the trader.

The mode of selling is picked-up or delivered, sometimes the fishermen deliver their harvest to their regular buyers or “suki”, but for marine fish buyers pick-up the fish along the shore. Before the fishing will arrive in the shore the buyer is already there. Payment as mentioned by all the respondents is cash or cash upon delivery.

Geographical Flow of Fish Caught in Sual, Pangasinan

From Sual, Pangasinan, the fish are brought to the different market destinations like in Metro Manila area, in Tarlac and also in Pangasinan like in Alaminos and Dagupan. From Dagupan, the fish are brought to other areas in Northern Luzon and in Baguio City. In Baguio, the fish especially the milkfish are sold as “Dagupan or Bonuan bangus” even if the fish came from Sual or Alaminos. Bonuan is a place in Dagupan known also as producers of quality fish.

Product Flow

The flow of products from fishermen to market destinations through the different actors is illustrated in the specific supply chain maps. Three supply chain maps were illustrated, the supply chain of inland fish, marine fish and the private fishing company. Figure 6 shows the flow of product of inland fish fishermen, the fishermen supply the fish to the local market wholesalers and retailers and supply also the traders and wholesalers in others areas



or provinces through wholesalers. These wholesalers supply the fish to local retailers in their area and from retailers it goes to buyers or the consumers. The fishermen also directly supply the processors if there are orders.

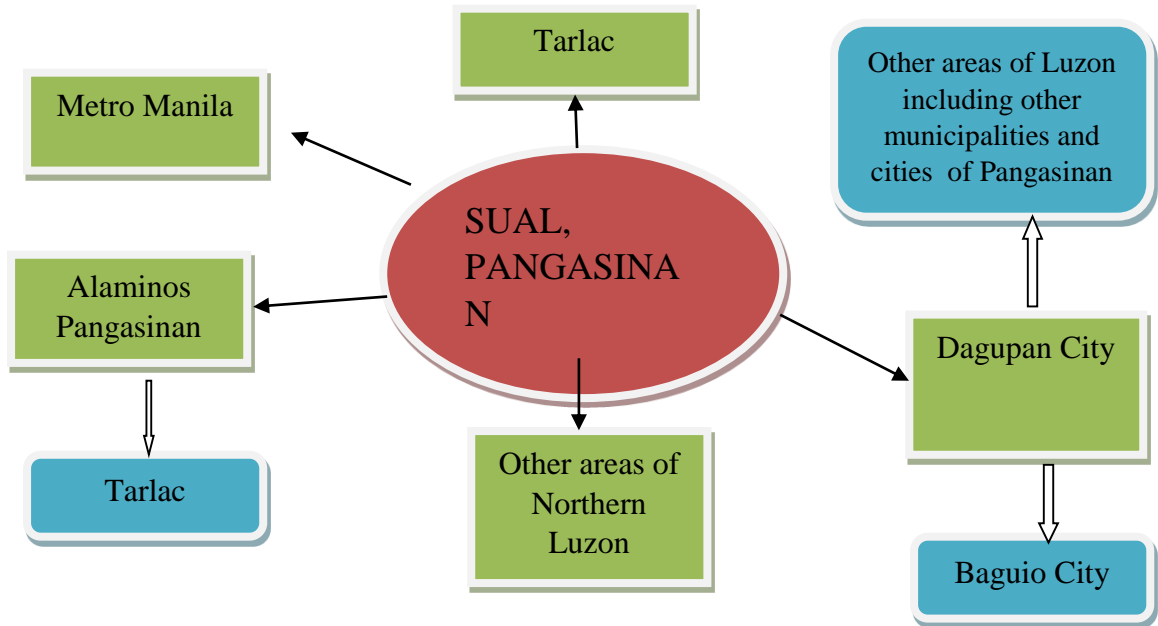


Figure 5. Geographical flow of fresh fish from Sual, Pangasinan

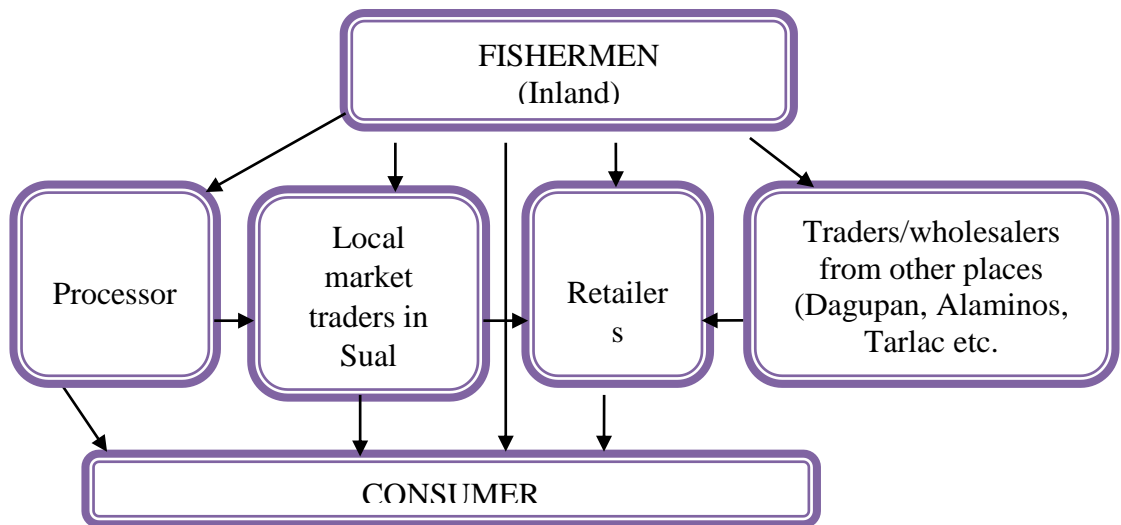


Figure 6. Product flow for inland fish



The flow of marine fish is similar with the inland fish. The fishermen supply the local market traders or retailers in Sual market and nearby municipalities. From the local retailers it goes to the consumers. The traders from other places supply the fish to retailers in their area of operation and then it goes to the retailers and from retailers to consumers. The fishermen also supply local processors and also retail to consumers. From local processors, the product are sold to consumers or delivered to retailers of processed fish in the area. The product flow is shown in Figure 7.

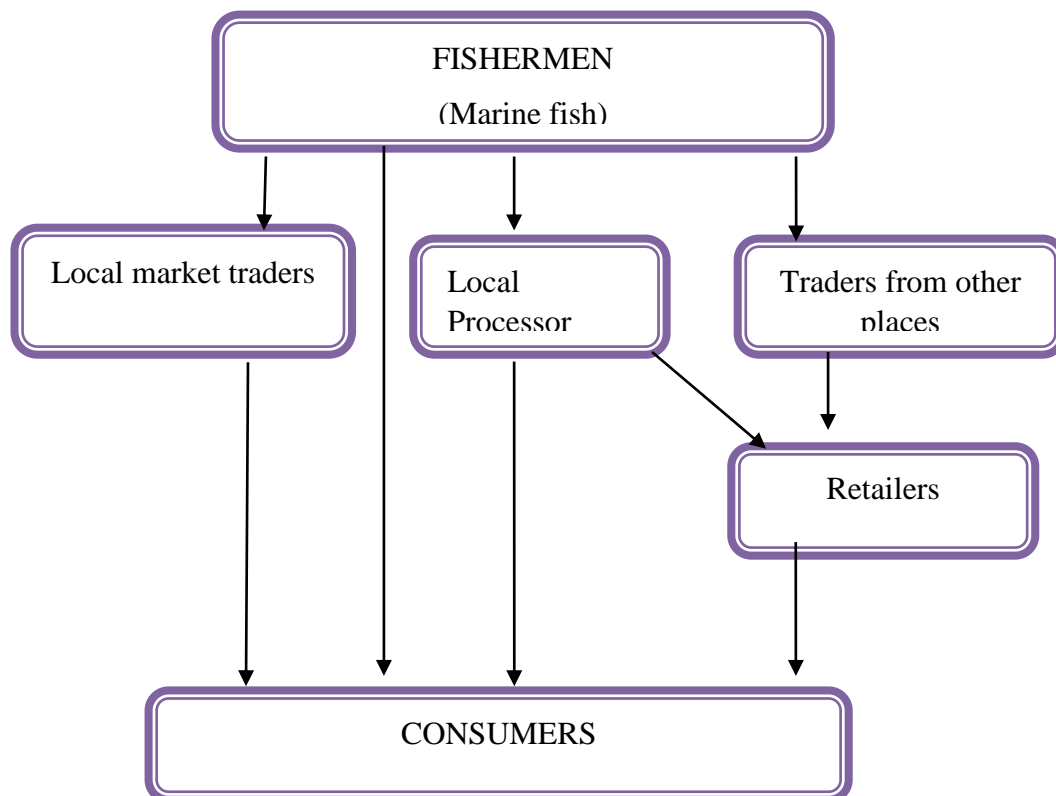


Figure 7. Product flow of fishermen (marine fish)

The PAFDC company supply their fish to the traders or wholesaler from Tarlac, Metro Manila, and also Pangasinan specifically the Alaminos and Dagupan market. From

Dagupan and Alaminos the fish are delivered to other areas or provinces like Baguio City, Urdaneta City, San Carlo in Pangasinan and even in La Union and Ilocos. The Tarlac traders also supply the different areas in Tarlac and even as far as Nueva Ecija and Nueva Viscaya. These traders supply the product to the consumers. The company also supply milkfish to the wholesalers in Sual, Pangasinan and these are supplied to retailers and from retailers it goes to the supplier (Figure 8).

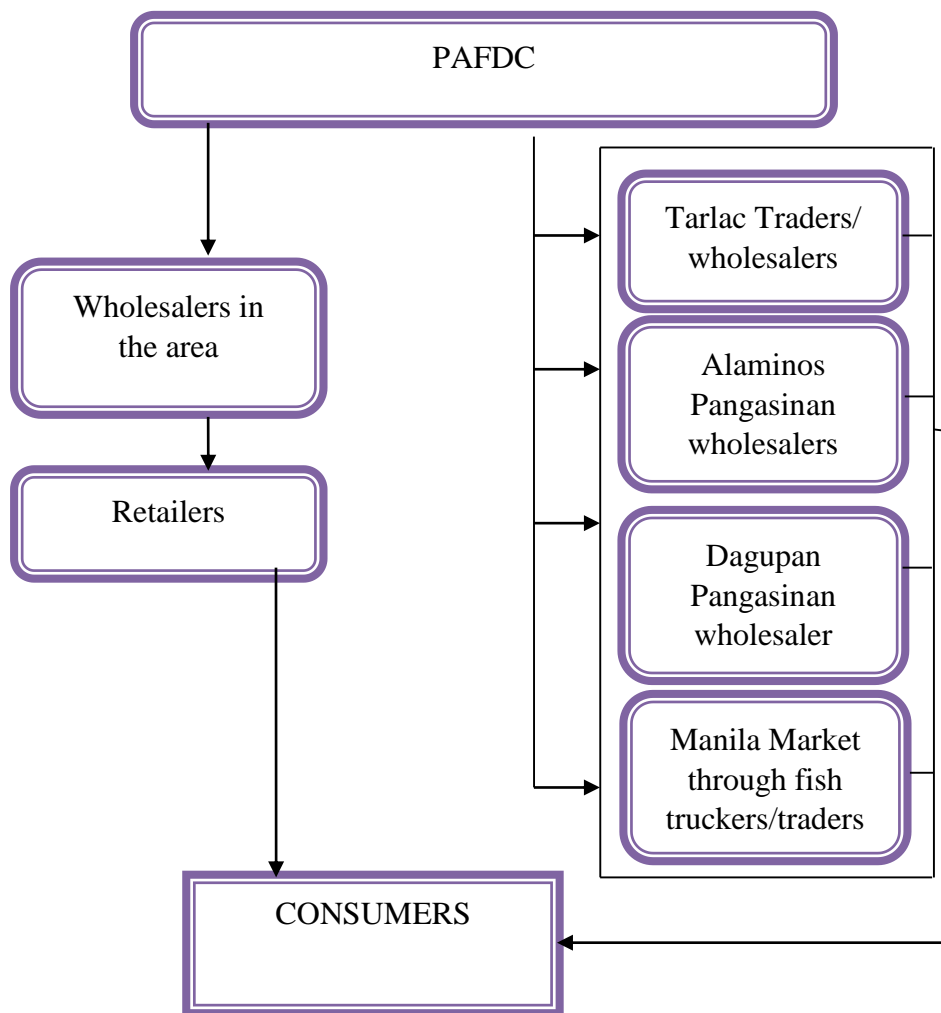


Figure 8. Product flow of PAFDC



The processors supply processed dried fish to retailers in local market (Sual market) or sell directly to consumers. If supply is abundant, the processor can also supply to wholesalers/ Some of the processor also processed fermented fish and fish sauce but usually for home consumption, excess is sold to neighbours.

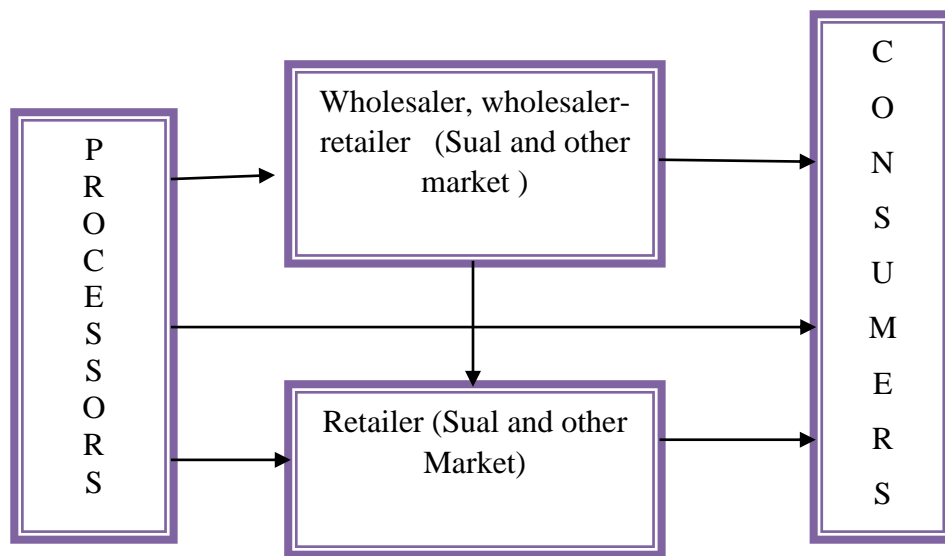


Figure 9. Product flow of processor

Result shows that the number of actors in fish trading is less as compared to other commodities as vegetables of the highlands. The reason is that the product is highly perishable and the traders would like to deliver the product as fresh as possible to have a better price and this is the characteristics that consumers /buyers require.

Payment Flow

Payment is in cash, except for a fishermen and traders who supply their regular buyer “suki” on credit but on a short term payment where it will take for one day. Price of fish varies depending on the supply situation in the production area or in the market. As of the survey time, the price of milkfish ranged from P80 to P90 per kilogram but in the



market the price ranges from P 90 -140 per kilogram depending on the size. Payment flow of fish and fish products is illustrated in figures 10-13. Payment is given by the buyers directly to suppliers or sellers.

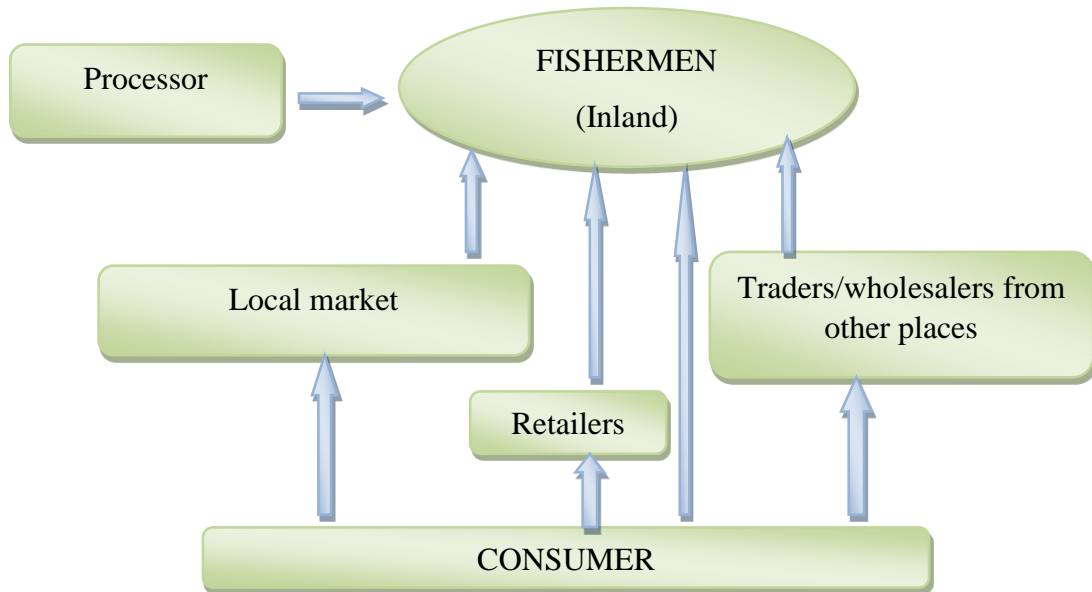


Figure 10. Payment flow (Inland fish)

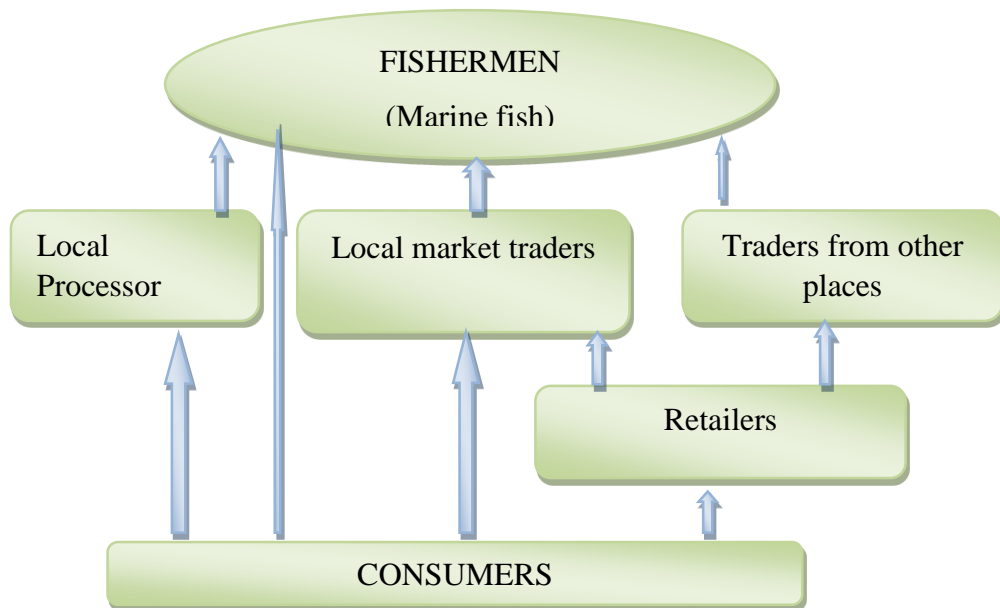


Figure 11. Payment flow of fishermen (marine fish)



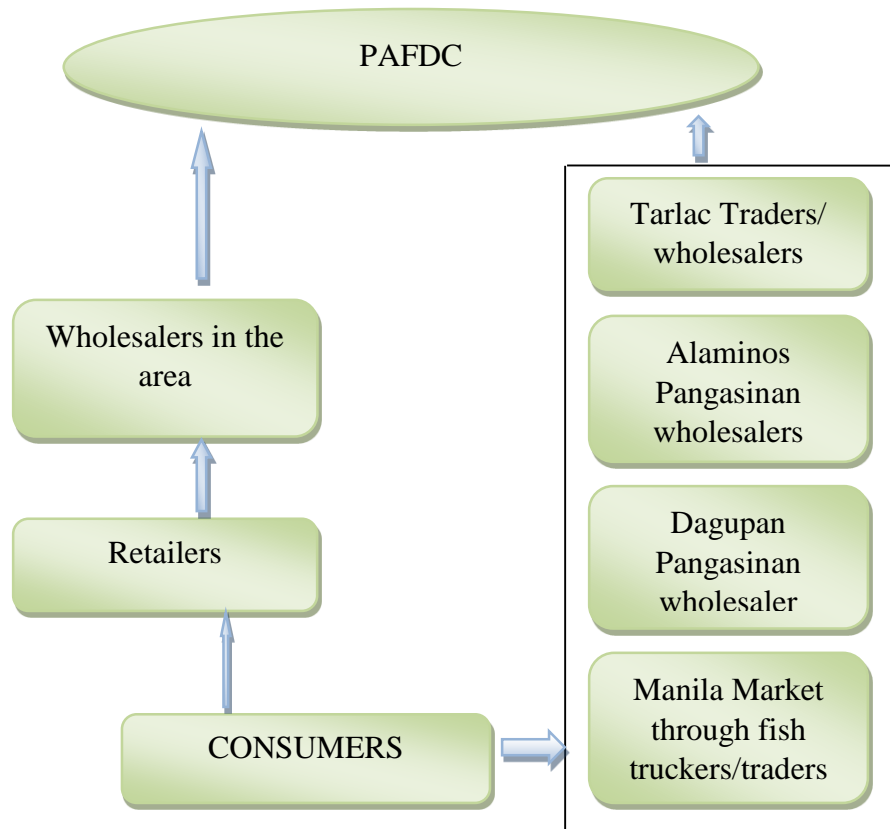


Figure 12. Payment flow of PAFDC

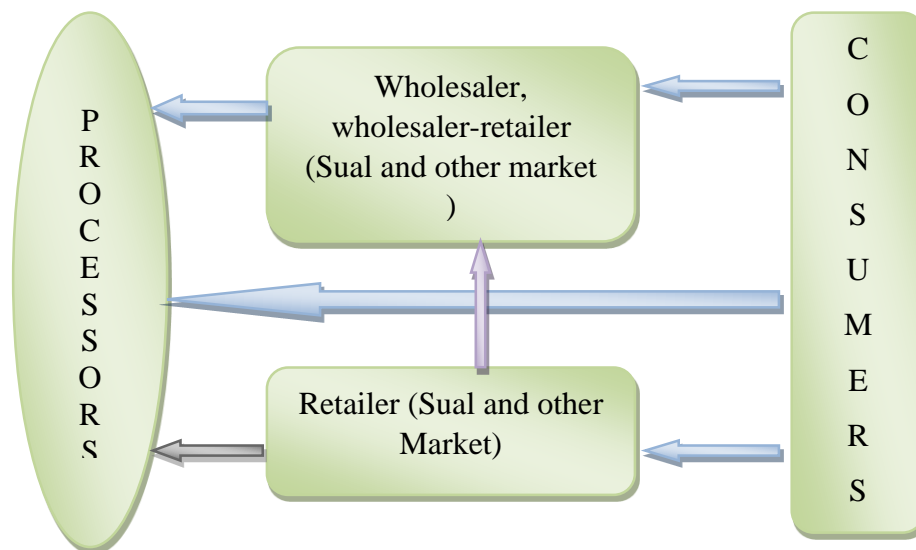


Figure 13. Payment flow for processed fish

Information Flow

There is sharing of information among actors in the chain except for the company (PAFDC) who does not share information especially on new production techniques. Information shared among fishermen, processors and traders are technology, market outlet and requirement and price. Information needs of the consumers are source, price and quality and these are provided by the fishermen, processor and traders. Sources of technology is shared or disseminated by BFAR through trainings on production and processing.

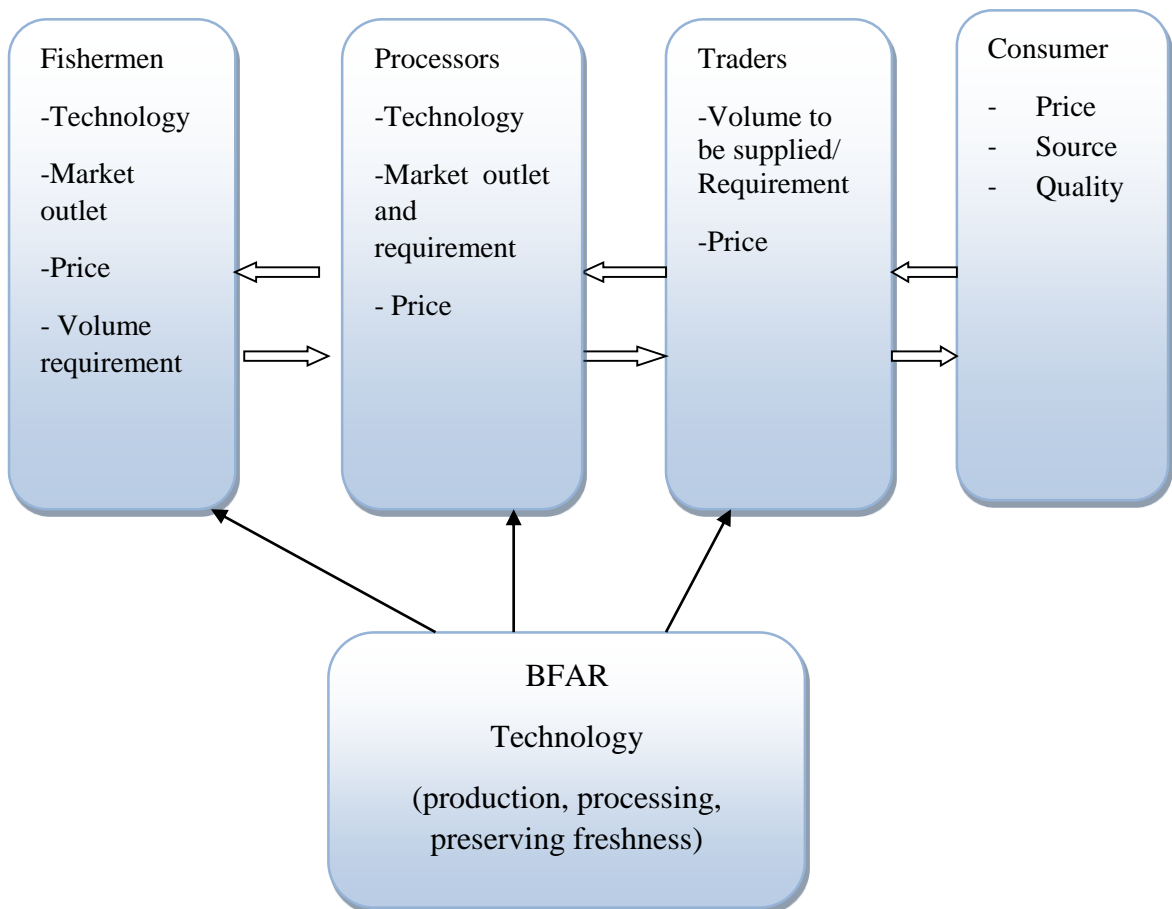


Figure 14. Information flow

Problems Encountered by the Different Actors

Table 6 presents the problems encountered by the different chain actors. Problems identified by the fishermen include the low price dictated by the buyers or traders. In most cases, the price is dictated by the trader buyer but there are also instances that the price is dictated by the fishermen, this is when the supply is low especially for marine fish. Another problem is the high price fluctuation and bad weather condition. Typhoons may destroy fish ponds and cages especially if there is flooding. For the marine fish fishermen, one problem is the too diversified catch yet small volume of fish catch. One of the fishermen mentioned the difficulty to collect payment from credit buyers.

Problems of traders identified were high market fees, lack of government support to improve or establish a market center for fish, price fluctuation, lack of market outlet, poor packaging materials to preserve the freshness of the fish, fresh and spoiled fish are mixed (this is experienced by retailers) and the problem on the price which is expensive but for the farmers the price dictated by these traders is low.

Problems of the processors are the lack of training on the new technology on processing and even on other ways of processing fish aside from the common drying method, lack also of market outlet, high market fees when they bring the product to the market place, lack of government support, some government policies and restrictions are hindrance to expand production, price fluctuation of raw materials and output, insufficient and seasonality of raw materials and low demand because some consumers do not like salted fish, thus a need for new technology of preserving fish without using too much salt.



Table 6. Problems encountered by the chain actors

PROBLEM	FREQUENCY	PERCENTAGE
Fishermen		
Low price dictated by buyers	30	65
High price fluctuation	12	26
Too diversified yet small volume of fish catches	5	11
Bad weather condition	4	9
Difficult to collect payment from credit buyers	1	2
Processors		
Lack of training	6	100
Lack of market outlet	6	100
High market fees	6	100
Lack of government support	5	83
Government policies and restrictions	5	83
Price fluctuation	4	67
Sanitation	4	67
Poor quality	3	50
Insufficient/seasonality of raw materials	3	50
Poor packaging materials	2	33
Equipments are not available	1	17
Low demand	3	50



Table 6. Continued...

PROBLEM	FREQUENCY	PERCENTAGE
Traders		
High market fees	13	87
Lack of government support	9	60
Price fluctuation	8	53
Lack of market outlet	7	47
Expensive	4	27
Fresh and spoiled fish are mixed	3	20
Poor packaging materials	3	20
Low demand	3	20



SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study was conducted to provide an overview of the fish industry in fishing areas/barangays of Sual, Pangasinan, identify the kinds of domesticated and marine fish catch in the area identify supply chain maps of fish in Sual, identify actors involved in the supply chain, identify the roles function and value adding activities of the supply chain actors , determine product, information and payment flow in the specific supply chain and identify problems and issues in the different specific supply chain maps.

A total of 93 chain actors served as respondents of the study. There were 4 chain actors identified in the study: the fishermen which includes the inland fish production and marine fish fishermen; the traders which includes fish trucker wholesaler, wholesalers, and retailers; the fish processors (processors of dried fish, boneless bangus, fermented fish and fish sauce); and the consumers. Each of these chain actors have their own role and function. The fishermen cultivate fish in fish cages and fish ponds or catch fish from the sea and supply their catch to traders. The traders buy fish from the fishermen, distribute to the different market areas, and make sure that the fish they supply will reach the consumers fresh. The processor process or preserve fish by salting and sun drying, or fermenting or processing into fish sauce or process boneless bangus. The consumer is end user of fish and fish products.

Fish from Sual, Pangasinan are delivered to the different areas of Pangasinan and other provinces like Tarlac, Manila and Baguio City. These fish, especially the milkfish are sold as Dagupan Bangus in Baguio City.



Three supply chain maps were illustrated, the supply chain of inland fish, marine fish and the private fishing company. For the inland fish production, the fishermen supply the fish to the local market wholesalers and retailers and supply also the traders and wholesalers in others areas or provinces through wholesalers. The wholesalers supply the fish to local retailers in their area and from retailers it goes to buyers or the consumers. The fishermen also supply the processors.

Product flow of marine fish is similar with the inland fish. The fishermen supply the local market traders or retailers in Sual market and nearby municipalities. From the retailers it goes to the consumers. The fishermen also supply local processors and also retail to consumers.

The PAFDC company supply fish to the traders or wholesaler from Tarlac, Metro Manila, and also Pangasinan specifically the Alaminos and Dagupan market. From Dagupan and Alaminos the fish are delivered to other areas or provinces like Baguio City, Urdaneta City, San Carlo in Pangasinan and in La Union and Ilocos. The Tarlac traders also supply the different areas in Tarlac and even as far as Nueva Ecija and Nueva Viscaya.

Price of fish varies and is often dictated by the traders and price depends on the supply and demand situation. For marine fish, most often the price is dictated by the fishermen especially if catch is low. Price is negotiated between the fishermen and the trader.

Mode of payment is cash and the fish are either picked-up or delivered, Delivered if the fishermen have regular buyers or “suki”, but for marine fish buyers pick-up the fish along the shore.



The problems encountered by the fishermen are low price dictated by the buyers or traders, high price fluctuation and bad weather condition. For the marine fish fishermen, problem is the too diversified catch yet small volume of fish catch. Problems of traders were high market fees, lack of government support to improve or establish a market center for fish, price fluctuation, lack of market outlet, poor packaging materials to preserve the freshness of the fish, fresh and spoiled fish are mixed (this is experienced by retailers) and the problem on the price which is expensive.

The problem of processors are the lack of training on the new technology on processing and even on other ways of processing fish aside from the common drying method, lack also of market outlet, high market fees, lack of government support, government policies and restrictions, price fluctuation of raw materials and output, insufficient and seasonality of raw materials and low demand.

Conclusions

Based on the result the following conclusions are drawn:

1. Six coastal barangays of Sual Pangasinan are into inland and marine fish fishing as livelihood and one private fishing company (PAFDC) is also in the place producing mainly milkfish.
2. There are four major actors identified in the fish supply chain: the fishermen (inland and marine fish); traders which includes fish trucker or wholesalers, and retailers; processors and consumers. Each of these actors has specific roles and functions.



3. There are few actors in fish market as compared to other commodities because the product is highly perishable and need to be in the hands of consumers as fresh as possible because this is the quality preferred by buyers.

4. The milkfish produced in Sual are supplied to the different markets in Pangasinan and other provinces and cities like Manila, Tarlac, Baguio City and are sold as “Dagupan, Bangus”.

5. Market outlets of fishermen are the truckers-wholesalers and wholesalers from other provinces, local wholesalers and retailers and processors if there too many supply or catch.

6. Market outlet of traders are the retailers in their area of operation.

7. Selling is cash, picked-up or delivered. For marine fish the buyer pick-up in the seashore.

8. Problems encountered by fishermen is the low price dictated by the traders especially if supply is abundant, high price fluctuation, too diversified yet small volume of fish catch, and bad weather condition.

9. Problems encountered by traders are: high market fees, lack of government support, price fluctuation, lack of market outlet, expensive, fresh and spoiled fish are mixed, poor packaging materials and sometimes low demand.

10. Problems of processors includes lack of training for technology on processing, lack of market outlet, high market fees, lack of government support, government policies and restrictions, price fluctuation of raw materials, insufficient and seasonality of raw materials and low demand.



Recommendations

1. The different chain actor should have mutual trust and dependence that can help in reducing risk of exercising power in the fish market.
2. In order to minimized risk and conflict among chain actors there should be efficient flow of communication especially on prices and supply.
3. The processor should attend workshop and seminar project on fish processing so that they can gain more knowledge to preserve fish.
4. Processors must discover how to process fish without too much salt.
5. BFAR should provide technology on fish production including that of processing.
6. For the traders they must have a good freezing truck in order to maintain the freshness of fish delivered to consumers.
7. There should be a market center for fish alone or build a packaging area for faster work and for the quality control and cleanliness.



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