Development of Tuna Fisheries in the Pacific ACP Countries (DEVFISH) Project

A BUSINESS MANUAL ON VALUE ADDED PRODUCTS FROM TUNA AND TUNA BY-CATCH

May 2007

Developed by
Robert Stone

FFA

PACIFIC ISLANDS FORUM SECRETARIAT

SPC Secretariat of the Pacific Community

The Business of Value-Adding to Fish

The Business of Value-Adding to Fish

Introduction

This business discussion will provide practical guidelines to assist existing entrepreneurs in the Pacific Island fishing business community with the setting up of sustainable and profitable seafood value-added businesses making value-added products from target species and the by-products of tuna fisheries. It has to be emphasized that the total business set must be completed and enacted before the first knife is wielded and dollar spent. These include:

1. The Industry
2. The company and the vision as well as the overall objectives of setting up a business
3. The business plan
4. Finance
5. The company formation and registration
6. Buildings, facilities and equipment
7. Staff
8. The products or service
9. Systems
    a. Key Sanitation Conditions and Practices
    b. Production Plan
    c. Quality Manual
    d. Accounts
    e. Records
    f. Business practice
    g. Maintenance schedules
10. Marketing, Packaging and Distribution.

The value-added products that can be produced are numerous and diverse and descriptions are available in various publications such as:

- Yamaha Motor Co., Ltd.
  "Fishery in Japan" Vol.2.
  Distribution and Processing of Fishery Products.
- Tuna Products Catalogue
  Forum Fisheries Agency 2000 Forum

Value adding to a whole raw fish at its source has many advantages and probably just as many disadvantages. Most of the fisheries in the Pacific are located in remote island nations with little developed infrastructure and only specific purpose orientated transport methods.

Value adding reduces the volume of the product that has to be moved and is ideally suited to those quality fish not destined to the high-end sashimi market.

1. The Industry

The region's fishery resources can be broadly split into two main categories: oceanic and coastal or inshore. Oceanic and outer reef resources include tunas, billfish and allied species such as mahimahi, wahoo, opah, oilfish, monchong and bottomfish. Like most other fishing methods, industrial tuna fishing results in the capture of non-target species, defined as:

- **By-product**
  Marlins, sailfish, mahimahi, wahoo and other species which are valued by sports fishermen; sharks which are the subject of growing concern due to their vulnerability to over-fishing;

- **By-catch**
  Marine reptiles, marine mammals, and sea birds, which may be endangered or formally protected in some jurisdictions;

Fishing methods used to capture fish used in this plan include purse seine, longline, hand line, reels, trolling and pole and line.

2. The Company and the Concept

In most countries in the Pacific where commercial fisheries are based the target species is either;

- Bigeye and Yellowfin tuna (FSM, RMI)
- Albacore tuna (Samoa, Fiji Tahiti, Vanuatu)

Both of these fisheries produce the same species mix of by-product and combined with the non-sashimi grade target species a substantial amount of the catch is available for value-added processing.

Usually the Pacific Island by-product catch is:

- Stored in refrigerated shipping containers for delivery to regional canneries.
- Sold on the local market for fish and chips
- Sold for home consumption
- Occasionally the product is processed and sold as fresh fillets
- Rarely is the product processed beyond the fresh/frozen vacuum packed product to produce products such as CO color-modified low grade sashimi products, smoked products and grilled (Tataki) products.

As mentioned in the introduction this manual will provide practical guidelines to assist existing entrepreneurs in the Pacific Island fishing business community with the setting up of sustainable and profitable seafood value-added businesses making value-added products from target species and the by-products of tuna fisheries. It has to be emphasized that the total business set must be completed and enacted before the first knife is wielded and dollar spent.

The Company formation and registration
It is usual practice to form a limited or private company that will be the instrument to house all of your business transactions. The company is an important tool as it develops its own identity and can be awarded concessions and other assistance not available to individuals. The company must

first have a name that is suggested by you or your accountant and is acceptable to the Registrar of Companies. The company is usually registered with the Companies office and application is accompanied with the Articles of Association of the Company. The Company is then issued with a Certificate under the Companies Act incorporating the Company under the Companies Act and the company is limited. Costs include the creation of the document, stamp duties and filing fees. Shareholders are usually two and paid up shares can begin at $1 each. Tax identification number and VAT registration can then be completed.

The setting up of a business is fairly straightforward and can be inexpensive if approached with care and logic. The actual documents are standard with additions to suit the business and can be completed in very little time. Do not be hoodwinked into excessive charges by professionals and wily consultants.

Developing a business plan is one way of defining the blueprint, strategy, resource and people requirements for a new venture. The business plan is not the end all and is probably obsolete as it emerges from the printer. Just because you have a plan does not mean the business will be an automatic success. Unless the fundamental opportunity is there along with the requisite resources and team needed to pursue it, the best plan in the world won't make much difference. The plan is not the business, just a method of organizing and understanding it so that important issues are not overlooked and fall through the cracks.

Finance
The acquisition of sufficient finance to cover the capital cost of development, to service cash flow, and inventory is indeed a difficult procedure and requires experience not usually available when starting out. Assistance from development banks and other financial institutions can be very helpful as can be the services of a good accounting firm but the budding businessman must be mindful of the lack of technical knowledge bankers and accountants have of your particular business so considerable thought and research must be done to convince your financers that in the end your income will exceed your expenses.

Buildings, facilities and equipment
Now is the time to develop your skill in factory building and supervision of architects and subcontractors. Utilize sources of information on GMP's (Good Manufacturing Process) and other regional and international sources of information and assistance pertinent to your project.

Staff
Small factories processing fish as value added products can be run exclusively by women. Most of the women in the Pacific are strong and capable of doing the work required. Perhaps one of the most important criteria in employing the staff is their basic education. Seafood factories produce products that if mistreated in production could kill the consumer and therefore the staff needs to have enough education to understand the requirements and implications of HACCP and quality issues. All of the staff should be HACCP trained and audits should be carried out to ensure the staff are kept in line and continue to practice what they are taught.

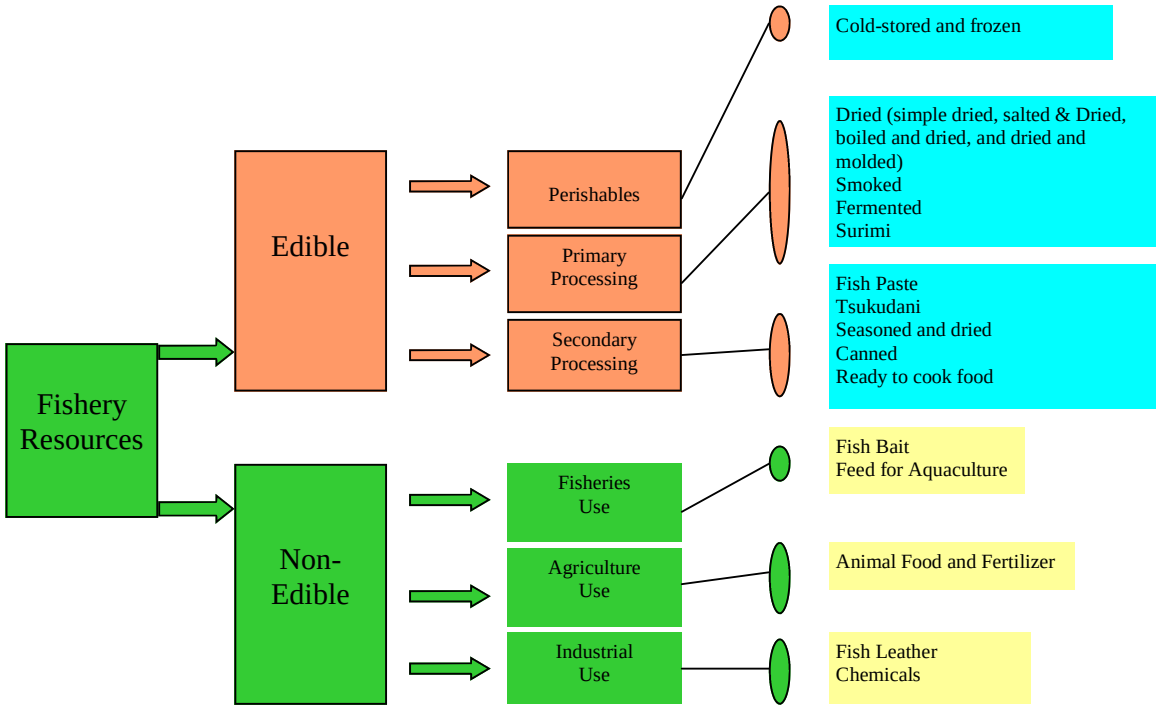
3. The Products or Service

- Products that can be produced in a small value-added factory are well described in two publications discussed earlier. It is intended that a future manual will describe in detail the manufacture of most of these products.

- In the initial stages of development of a niche value-added factory, thought should be focused on products that are a day-to-day food rather than exotic high end products that rely on the whims of distributors, restaurants and international promotions. There needs to be a fairly healthy demand for the product rather than continuous marketing efforts trying to create demand. Most of the products consumed in the world market that are commercially worthwhile producing are manufactured in developed countries of the temperate and cold climate zones where a tradition of non-refrigerated preservation and resulting taste uniqueness has culminated in substantial markets for these products.

- Why process the fish?
  Only a small proportion of the catch is destined to the high-end markets. Canning processes most of the Oceanic target species. Canning, with its great storage method, has probably the lowest profit margin. However, success has endured because of its standard processing methods, vast throughput and systems that have been perfected over time to eliminate those margins that are unprofitable.

  Canneries follow labour cost and skill so that processing or partial processing requiring most labour input is done in areas where this commodity is available and not necessarily were the fish is caught. This is also the case for some of the other great value-added products such as dried skipjack tuna (Fushi or Katsuobushi)



4. Production Plan

The production of safe food requires that a HACCP system be implemented and be built upon a solid foundation of prerequisite programs. Each segment of the food industry must provide the conditions necessary to protect food while it is under their control. This has traditionally been accomplished through the application of GMP's. These conditions and practices are now considered to be prerequisite to the development and implementation of effective HACCP plans. The following prerequisite programmes have been included to provide the basic environment and operating conditions that are necessary for the production of safe and wholesome food.

- Facilities
- Production Equipment
  - Calibration
  - Repairs and Maintanence
- Standard Operating Procedures
  - Reception of Fish
  - Storage and Handling Controls
  - Labelling and Packaging Control
  - Shipping
- Supplier Controls
- Product Specification
  - Approved Supplier Program
- Personnel Policies
  - Policies and Procedures for Employees
  - Training for GMP's, Sanitation procedures, Personal safety, HACCP.
- Traceability and Recalls
  - Identification and Traceability
  - Customer Complaints handling
- Waste Management
- Product Testing

Quality Manual
HACCP Plan

Assuming that the above systems are in place and operating then the production plan will operate efficiently.

To develop production processes this manual will use cold smoked marlin packaged and ready to be exported from the factory. Some discussion will be done on the cost of export and method.
Other species of fish will also be used to illustrate points of interest.

Also refer to the Excel sheet titled "Yield Calculations" for a work station to accomplish your own work sheets

5. The Financial Plan

The financial plan is basic to the evaluation of an investment opportunity and needs to represent your best estimates of financial requirements. As part of the financial plan, financial exhibits need to be prepared. To estimate cash flow needs use cash-based accounting.

Budgeting for Business Decisions

Budgeting is one of the most useful tools available to management. The budget is a physical and financial plan that projects results before the decision is made and real dollars are committed. Four types of budgets that can be used:

1. Total business budget
2. Cash-flow budget
3. Partial budget
4. Pricing

The total business budget is the initial budget formulated to show that the business concept can be profitable and is also used when major business changes are contemplated. The cash-flow budget is used to plan for day-to-day financial needs, monthly assessments and annual projections. The partial budget is used to project the results of decisions that effect only part of the business; the purchase of a truck is a good example. Pricing is the budget type that is used almost weekly and is the most important day-to-day tool used to ensure you are selling the product for the right price

Cash-flow Budget

Attached to this manual, in the excel workbook, is a linked cash flow worksheet example.

The financial plan is basic to the evaluation of an investment opportunity and needs to represent your best estimates of financial requirements. As part of the financial plan, financial exhibits need to be prepared. To estimate cash flow needs use cash-based accounting.

Pricing Items

1. Cost of Raw product
2. Yield
3. Cost of loin
4. Cost of Production
5. Cost of Freight
6. Fixed Costs
7. Cost of Outer Packaging
8. Cost of Product Packaging
9. Cost of Local Transport

Pricing of Product

The best single source of information for pricing is to use the cost figures obtained from your own records, diaries, forms and logs. The more efficient and accurate your records are the easier it will be to punch out a new selling price for your finished, packaged, shelf ready, product when a significant change occurs in the costs of products or fish species.

Pricing Process

The pricing process is presented as an excel sheet, which will take the reader through the process of setting the price for a value-added fish product. The example used in this manual is for cold smoked sliced packaged marlin and is used to show the interrelationships of yields and the process of weight loss due to off-cuts, water loss and trim. This pricing process is for a small factory with a small labour force and staff that are trained to handle many jobs. Fixed costs are not strictly definition driven but reflect the actual situation in small factories.

To begin the analysis process a copy of a Fish Processing Chart (Yield Estimation & Processing Results) was filled out with actual results of fish procurement activity and the results were linked to the whole process of producing a value added product. The worksheets are colour coded so that those figures colored with rose should be filled in by your own company experience.

How To Use The Programme (Workbook)

You are in control of this programme; you enter the figures and the computer does the calculations
The workbook has 11 worksheets

- Worksheet 1. Fish processing chart
- Worksheet 2 Calculates cost of raw product
- Worksheet 3 Calculates yield
- Worksheet 4. Calculates the fixed costs
- Worksheet 5. Calculates cost of shipping
- Worksheet 6. Calculates cost of production

- Worksheet 7. Calculates cost of packaging
- Worksheet 8. Calculates cost of labour
- Worksheet 9. Income from processing cold smoke marlin for export
- Worksheet 10. Income from processing cold smoked marlin for local sale
- Worksheet 11. Calculates cash flow

To assist in the operation of this programme the boxes have been colour coded as follows:

A rose box where you insert data

A clear box were the computer calculates results

A yellow box is for explanations

1. Worksheet 1 - Fish Processing Chart

Fish Processing Chart	
DATE 12 April	**Batch No.11**
Species	**Marlin**
No. of fish (H&G)	**4**
Total Purchased Weight	**239.62**
$ / Kilo	**$3.00**
Cost (weight x $)	**$718.86**
Processing 1. (Filleting)	
Weight:	**Weight (Kg)**
1. Loins	**89.0**
2. Head	**0.00**
3. Belly	**14.90**
4. Bones and dark meat	**42.78**
5. Fillets	**42.67**
6. Skin and Guts	**31.30**
7. Nakaochi (Scraping from Frame)	**18.90**
Total Processed Weight	**239.51**
Difference between total wt. and processed wt.(Drip Loss)	**0.11**
Yield of loins % to total weight	**37.1%**
Weight of loin used for smoking	**89.0**
Weight of loin remaining	**0.0**
Smoked loaf weight	**78.3**
Yield of loaf	**32.7%**

When the fish arrives at the factory it is weighed and allocated a batch number. The weight, price and number of fish are entered.

The fish is cut and each portion is placed in its own bin, weighed and recorded

Yields are calculated

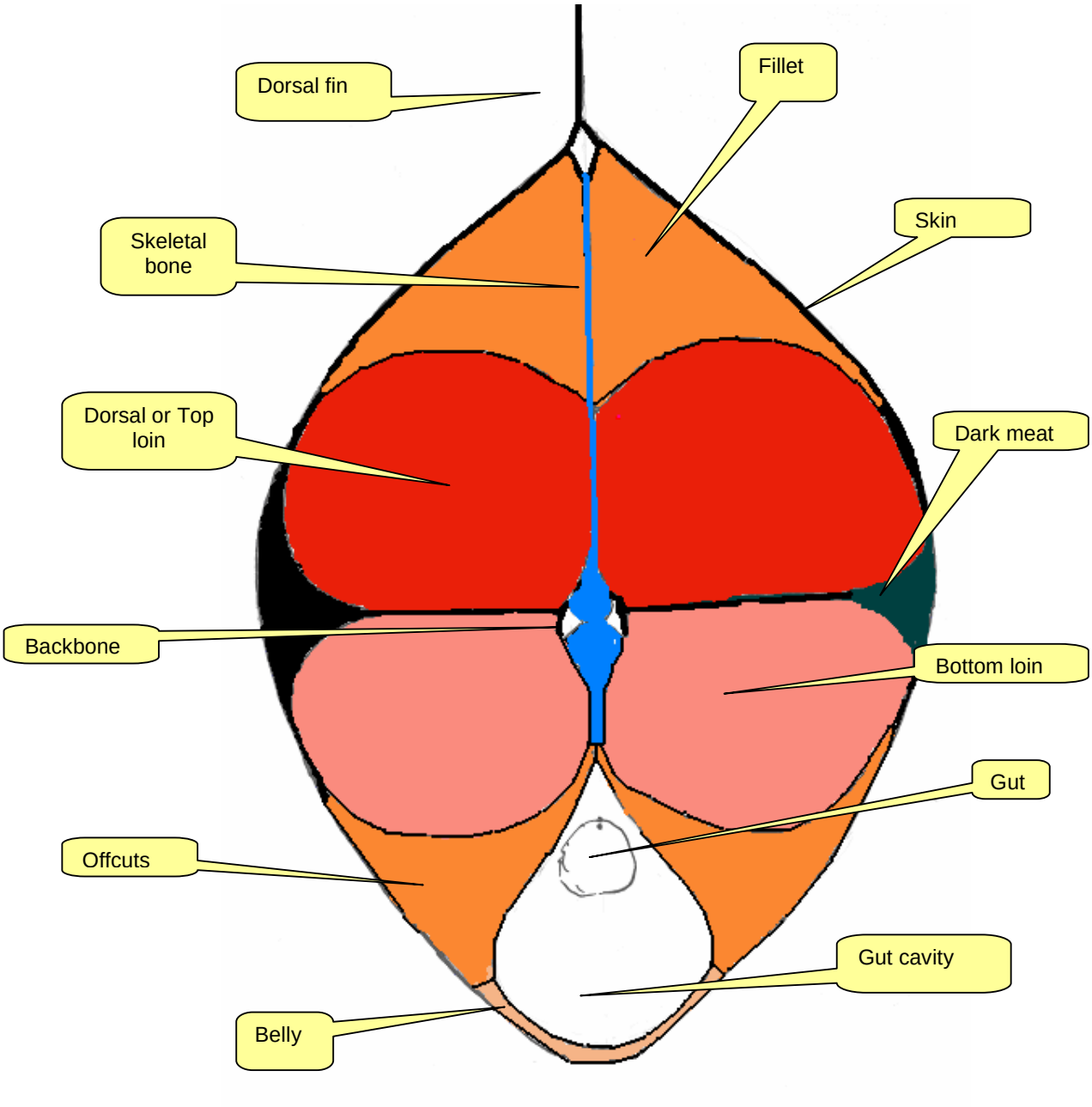
Initial weight used to create Wt for processing (Calculated)	**151.8**
Weight of loaf for slicing 1	**49.6**
Smoked Sliced weight	**43.0**
Yield of sliced weight	**28.3%**
No. of 500g boards	**86.0**
Wt of fish on 500g boards Kg	**43.0**
Smoked Trim	**6.5**
Smoked loaf weight remaining	**28.72**
Initial weight used to create Wt for processing (Calculated)	**69.1**
Weight of loaf for slicing 2	**22.6**
Smoked Sliced weight	**19.5**
Yield of sliced weight	**28.2%**
No. of 500g boards	**39.0**
Wt of fish on 500g boards Kg	**19.5**
Smoked Trim	**3.0**
Smoked loaf weight remaining	**6.1**
Initial weight used to create wt for processing (Calculated)	**19.6**
Weight of loaf for slicing 3	**6.4**
Smoked Sliced weight	**5.5**
Yield of sliced weight	**28.1%**
No. of 500g boards	**11.0**
Wt of fish on 500g boards Kg	**5.5**
Smoked Trim	**0.914**
Total No. of 500g boards	**136**
Total smoked sliced weight Kg	68
Final Yield	28.38%

Three separate yields are calculated

In this example three separate slicings are done

This is the yield that is used in the final analysis

Cross Section of a Marlin Showing Cuts and Waste



2. Worksheet 2 - Cost of Raw Product

The cost of the raw product is reliant on a number of factors. These are largely based on the international cannery price, local wholesale price, and spot international auction prices.

Cost of Raw Product	F$/Kg
Marlin	$3.00

The price in $/kg is entered in the processing chart and is linked throughout the workbook

3. Worksheet 3 - Yield Calculations

Weight and yield of smoked Marlin processing,		
	Weight (Kgs)	Yield
Raw Weight	239.62	100.00%
loin weight	88.96	37.13%
loaf weight	78.34	32.69%
Weight of sliced product	68	28.38%

- The example in this case is with 239.62kg of H&G marlin being purchased from an approved supplier. (Have an approved supplier agreement in Quality Management Plan)
- The fish produced 88.96 kg of loins with a yield of 37.13%
- Loaf weight after smoking was 78.34 kg, which is a 32.69% yield from the whole fish. Water is lost from the loin when salting and smoking.
- The loaf is then sliced and the slices placed on a board then vacuum packed in a special pouch. The yield after slicing is 28.38%. The trim is used to make another product.
- This yield is calculated by the computer in the “processing chart” and transferred to the master “worksheets” export and local sales.

Yield Comments

The most important factor in the profitability of value-added fish production (aside from selling price) is usually the yield of the finished product. This is because cost of raw material represents the largest percentage of total costs. Producers should understand how processing procedures affect the interrelationships between yield, throughput, and final profitability. The processing yield of various species depends almost entirely on the shape of the fish, the size of the head and in the case of smoking the amount of loin that can be extracted from the usable flesh. Every fish species has a different yield ratio.

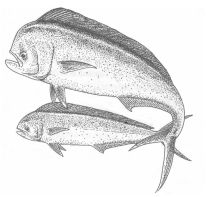
Definitions:
Loin and fillet is cut flesh from Frame
Loaf is smoked loin or fillet.

Species	Wt. of fish	Loin Wt.	Head	Skin	Frame	Yield to loin	Head Yield
Mahimahi Female	4.9	2.3	1.02	0.44	1.14	47%	21%
Mahimahi Male	11.24	4.9	3.3	1	2.04	44%	29%
Spanish Mackerel	11.32	6	1.7	1.3	2.3	53%	15%

High Head Yield

High Loin Yield

Different yield percentages can occur between different species of fish and in some cases different sexes of the same species.



Species	Wt. of fish	Loin Wt.	Yield to loin	Cost /Kg Fillets
Mahimahi Female	4.9	2.3	47%	$6.39
Mahimahi Male	11.24	4.9	44%	$6.88
Spanish Mackerel	11.32	6	53%	$5.66
Cost of fish per kg	$3.00			

Low cost

High Yield

Fish with the same buying price as whole fish in this case $3.00 / Kg can have quite different prices for the processed fillet or loin. If yields are totally different from norms or expected, make sure there are no hidden reasons such as the fish cutter leaving flesh on the frame or cutting the head off so that a good proportion of flesh remains with it so that friends can benefit.

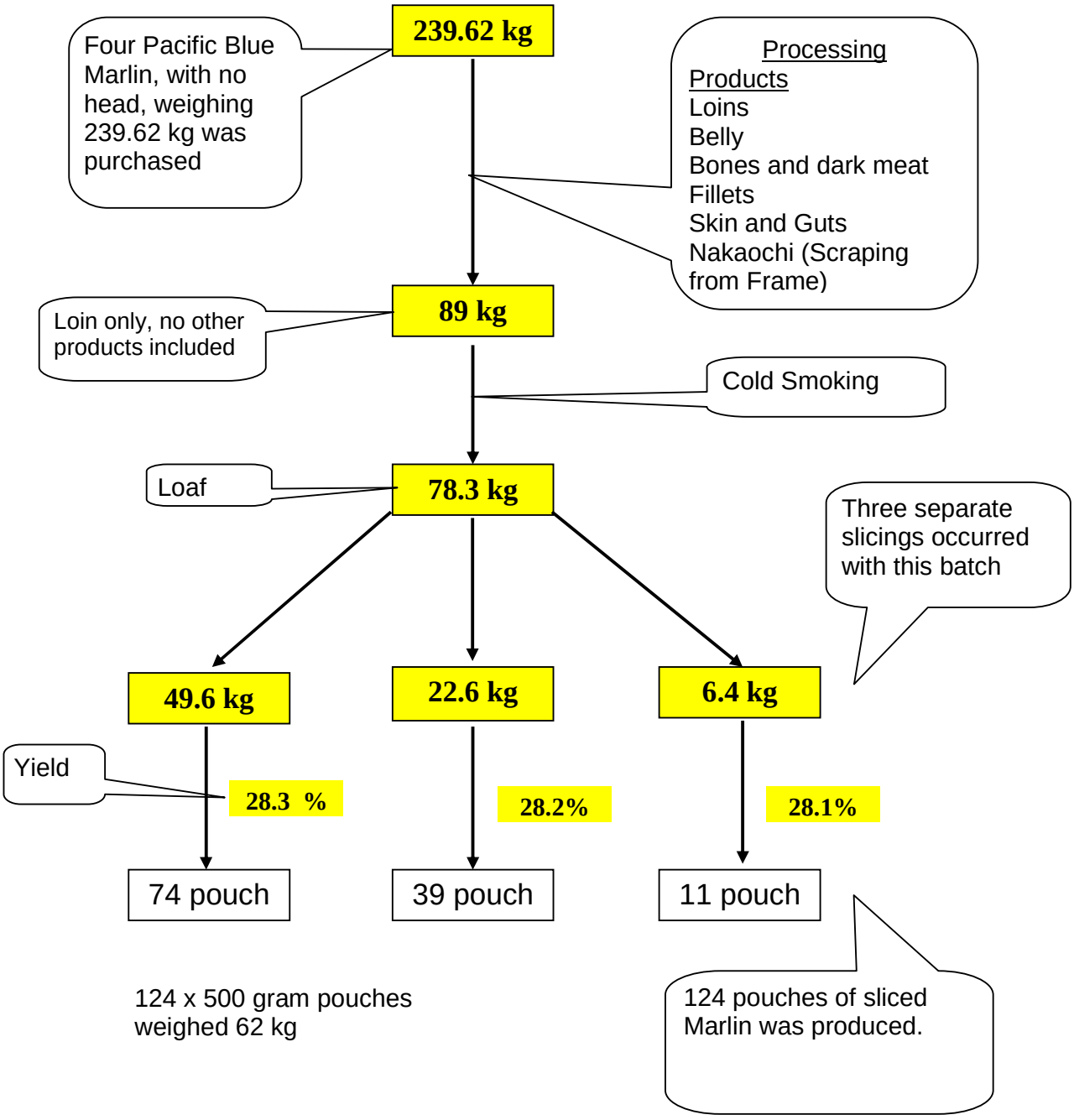
The effect of yield on various stages of production

Initial purchase price of fish

Marlin Cost Variation during Processing			
	Weight (Kgs)	Yield	**Cost**
Raw Weight	239.6	100.00%	$3.00
Loin weight	89.0	37.13%	$8.08
Loaf weight	78.3	32.69%	$9.18
Sliced product weight	68.0	28.38%	$10.57

The cost of the raw product (H&G marlin logs) once cut yields a number of by-products and only 28.38% of sliced smoked Marlin, the primary product. The cost of the sliced products without any fixed or variable costs of production is $10.57

Pacific Blue Marlin Processing showing weights and yields obtained.



4. Worksheet 4 - Fixed costs

Any cost not included in the production costs category we have included as a fixed cost. Some of these costs are not true fixed costs but for this exercise it is much more convenient to include them here. Fixed costs do not normally increase or decrease with production effort, as they are associated with ownership of the business and its assets. Fixed costs are sometimes referred to as “overhead costs”.

Fixed Costs	
Office supplies	$200
Cost of Labour	$3,276
Repairs	$250
Rent	$650
Insurance	$300
Telephone	$200
Electricity	$700
Vehicle	$300
Accounting	$200
General	$200
Total Fixed Costs	$6,276.00
Fixed Cost, Loin / Kg	$2.09
Fixed Cost, Smoked / Marinated	$3.14
Fixed Cost Chili Jerky	$6.28
PRODUCTION / MONTH	
Production / month Fresh Fillets	$3,000
Production / month Smoked Marinated	$2,000
Production / month Chili jerky	$1,000

This cost is the total fixed costs divided by monthly throughput of processed loaves. We have three figures here as each process (loining, marinating and chili) is more complex and we feel requires more "fixed cost" allocation

Office Supplies

Enter roughly what you expect to spend on office operations during and average month. Items such as printer cartridges, paper, files, pens and other miscellaneous items. Note that in this case $200 / month is taken into account to cover the cost of repair or replacement of computer.

Cost of Labour

Refer to Cost of Labour worksheet. The cost of labour has been allocated to the fixed cost category, as usually the staffs in a small factory are full time employees doing a plethora of jobs not all associated with production. The average small-scale factory worker will, on any one day, have to:

Scrub down work area to begin the days operation

- Remove fish from thawing bins
- Fillet or loin day’s production
- Vacuum pack loins or salt loins for smoking
- Fill out all manner of forms
- Clean work benches often
- Maintain equipment
- Calibrate equipment
- Make up cartons and packaging
- Take inventory
- On slow days weed and clean up around factory.
- Kill vermin.
- Sharpen knives and saws

Repairs

Enter roughly what you would expect to spend on office equipment repairs during an average month. Cover the cost of repair or replacement of computer, printer, scanner, cash register,

scales and other electronic equipment. Also repair on factory machinery such as refrigeration, vacuum machine, smoker, etc.

Rent
As per rental agreement, if this is applicable.

Insurance
Various types of insurances apply and should be researched thoroughly.

Telephone
Usually a nightmare, look at local locks and methods of containing abuse.

Electricity
As per existing electric bill. If you need to calculate projected costs a qualified electrician can give you estimate usage based on horsepower and unit cost.

Vehicle
As per monthly bill.

Accounting
This is an estimate for doing annual tax returns.

General
It is expensive to maintain an office and small factory. Good technicians are an important part of keeping costs down; money and time should be spent ensuring they are kept on side.

5. Worksheet 5 - Cost of Shipping

Amount of product to be shipped	100.00	kg
Number of master ctns needed	4.00	
Packaging weight	23.71	kg
Product weight in kg	100.00	kg
Total gross shipping weight	123.71	kg
Freight rate for +100kg including .30 fuel surcharge	$5.30	
F$	$655.67	Freight
Customs	$0.00	
Agents charges Flat Surcharge	$71.00	
Regulatory authorities	$0.00	
Security Charge, Insurance levy	$22.00	
Transshipment Charge	$35.00	
Local transport	$100.00	
Local labour and ice	$100.00	
Cost of shipping	$983.67	
Cost of shipping / kilo	$9.84	

Using formula: (Product wgt in kg divided by weight of permissible fish per carton) gives a number plus a fraction. If the fraction is above 0 .3 go to higher number and enter

This is the freight rate as charged by the airline

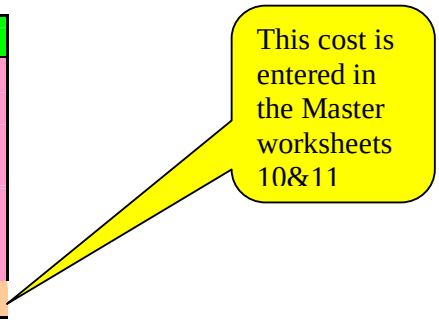
Freight cost is a critical in the pricing.
There are a number of items here that vary with broker and airline so that none of these may be relevant to individual situations. The fuel levy in Fiji at this date varies .10 cents between airlines. Each item listed and those not yet invented or discovered should be checked thoroughly.

As the weight of product to be shipped increases the cost of shipping decreases. When a LD3 shipping container is used the size of the carton can be increased as weight restrictions are eased and the cost per kilo is reduced, as the total cost of the container is the unit considered and not the cost per kilo. When shipping whole fish this as very important.

6. Worksheet 6 - Cost of Production

There are a number of costs that are incurred once actual work begins and these are outside the fixed costs. It is important to allow for these extra items in pricing.

Cost of Production	
Freezer Pouch	$0.05
Brining (Salt)	$0.05
Smoking and Drying	$0.50
Chemicals	$0.05
Clothing, hardware such as knives	$0.07
Laundry	$0.10
Total	$0.82



These items are used in the day to day operation of the factory. The same amount of laundry and cleaning chemicals are used no mater what the through put as the factory has to be cleaned the same way every day. Cost variations can occur with consumables and operation. The smoking and drying electrical element is in addition to fixed cost electricity to cover possibility of huge orders.

When jerky and marinated products are processed the cost of production can increase significantly.

Cost of Production -- Jerky	
Freezer Pouch	$0.05
Kikkoman + garlic + pepper	$3.93
Smoking and Drying	$0.50
Chemicals	$0.05
Clothing, hardware such as knives	$0.07
Laundry	$0.10
Total	$4.70

7. Worksheet 7 - Cost Of Packaging

Cost of Outer Packaging (Shipping Carton)

Smoked Fish Export Carton Cost	
Outer Carton	$3.50
Two Inner Carton (@ 2.50 each)	$5.00
Polystyrene inserts	$12.00
Total	$20.50

This cost is used in the pricing worksheet calculation for the outer packaging

Cost of Product Packaging

Packaging Costs	
500g sliced package Made up of the following	
Board Cost	$0.64
Pouch cost	$0.70
Add 50% for wastage to give total	$1.69
Cost of Packaging for 1 kg	$3.38

This cost is used in the pricing calculation for the cost of product packaging

When designing a carton for export ensure that the dimensions are such that maximum use of the interior of an LD3 shipping container can be used. The weight of the filled carton should also be considered so that handling is not issue. Strength of the carton is important but do not overdo it as weight and cost of the carton increases biting into profit.

8. Worksheet 8 - Cost of Labour

The cost of labour has been allocated to the fixed cost category as usually the staff in a small factory are full time employees doing a plethora of jobs not all associated with production.

Position	Wage / month	Comments
Manager	1,040.00	Weekly wage x 52 (weeks) Divided by 12 (months) . This can also be: Hourly wage x 8(hours) x 5 (days) x 52 (weeks) Divided by 12 (months)
Staff supervisor	520.00	
Recorder	433.33	
Production staff	346.67	
Production staff	346.67	
Production staff	346.67	
	3,033.34	
FNPF	242.67	
Total	3,276.00	

This figure is used in the fixed cost worksheet

Worksheet 9 - Income from processing cold smoke marlin for export

This is one of two master worksheets, which goes thru the process of calculating export and local pricing, yields and income.

Income from processing of Marlin (Export)		
Yield (Sliced)	28.38%	Final Sliced Yield
Cost of Raw product (F$/kg)	$3.00	
Cost of Sliced product per kg	$10.57	Cost of raw product divided by yield of sliced product
Cost of Production	$0.82	Refer to 'Cost of Production' worksheet
Cost of Shipping	$9.84	Refer to 'cost of shipping' worksheet
Fixed costs	$3.14	Refer to 'Fixed Cost" worksheet
Cost of Outer Packaging Shipping carton	$0.82	Total Carton cost / wt of product in carton
Cost of Product Packaging	$3.38	Refer to 'Cost of Packaging' worksheet
Local transport	$0.50	$100 / trip @200kg / trip
Total	**$29.07**	
Mark-up (flat $5)	$7.75	
Total cost of packaged product in carton	$36.82	
Exchange rate US$ / Fiji $	$0.60	
Price in US$ / 500g board	$11.04	
Price for 500g board $F	$18.41	
Price per kilo of packaged product	$36.82	
Total Number of 500g boards produced	136.0	
Income	$2,503.50	
Cost of raw product	$718.86	
Profit / loss	$527.00	

Outer carton 3.50
Inner carton 5.00
Poly Insert $12.00
Total $20.50
25 kg of product in carton

Income is total number of pouches produced multiplied by selling price of the board.

Income has cost of fish and processing cost subtracted to give return

9. Worksheet 10 - Income from processing cold smoked marlin for local sale

Income from Processing Cold Smoked Marlin (Local)		
Yield (Sliced)	28.38%	Final Sliced Yield
Cost of Raw product (F$/kg)	$3.00	
Cost of Sliced product	$10.57	Cost of raw product divided by yield of sliced product
Cost of Production	$0.82	Refer to 'Cost of Production' worksheet
Cost of Shipping	$0.00	Refer to 'Freight' worksheet
Fixed costs	$3.14	Refer to 'Fixed Cost" worksheet
Cost of Outer Packaging) Shipping carton	$0.82	Total Carton cost / wt of product in carton
Cost of Product Packaging	$3.38	Refer to 'Cost of Packaging' worksheet
Local transport	$0.50	$100 / trip @ 200kg / trip
Total cost of producing packed product	**$19.23**	
Mark-up	$7.75	
Charge out price $F / Kg	$26.98	
Selling price for 500g board	$13.49	
Total number of 500g boards produced	136.0	
Income	$1,834.60	
Cost of raw product	$718.86	
Profit / loss	$527.00	

Outer carton 3.50
Inner carton 5.00
Poly Insert $12.00
Total $20.50

25 kg of product in carton

This is Actual cost of selling 500g board.