

# CARRYING OUT A FEASIBILITY STUDY

**PRACTICAL ACTION**  
Technology challenging poverty

An idea for a business is not a sufficient reason to begin production straight away. It is essential to be aware of the different aspects involved in actually running the business. To reduce the risk of failure, producers should first go through the following aspects and finally develop a business plan.

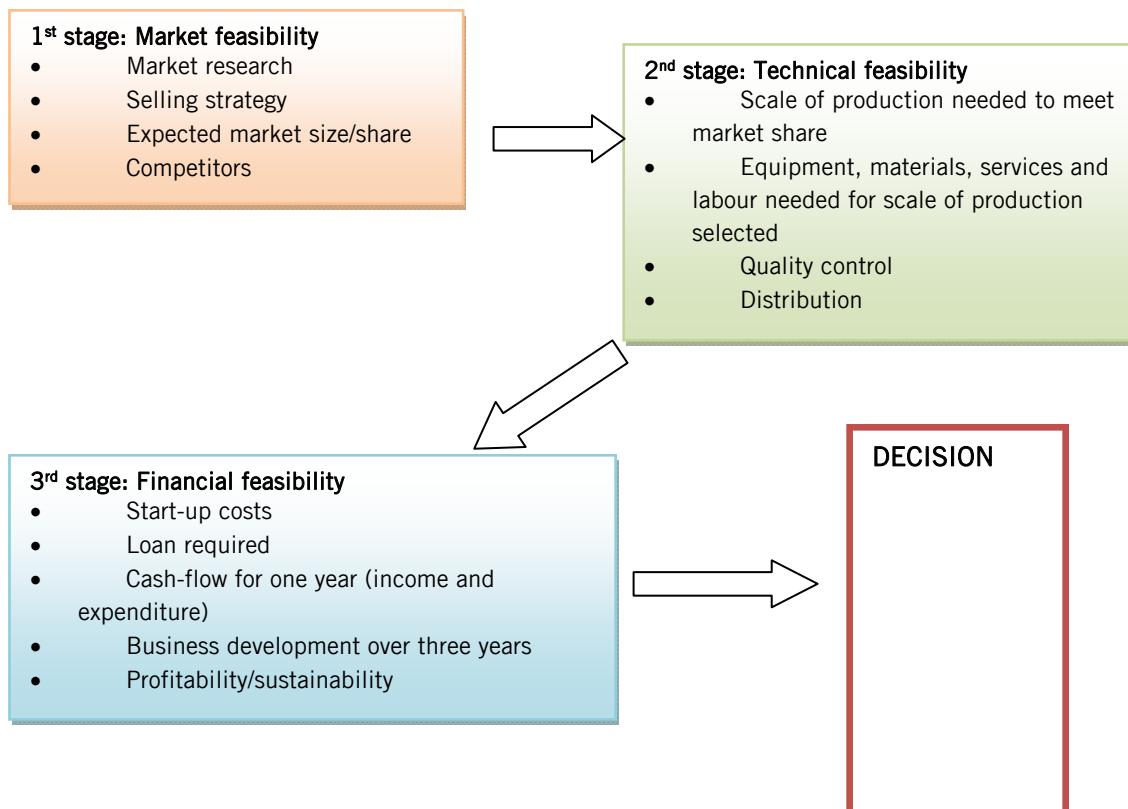
## 1. Assess yourself as an entrepreneur

The success of any business depends largely on the entrepreneur's personal characteristics, skills and financial situation. To be a successful entrepreneur you need to:

- Have a strong commitment to your business
- Have strong motivation to own your business
- Be able to take considered risks and to make important decisions
- Have the support of your family and friends
- Have the necessary technical skills to produce the product of your business
- Have enough business management skills, such as selling, record keeping and costing, to run a business of your own
- Have sufficient knowledge of your line of business
- Have sufficient personal funds.

## 2. Conduct a feasibility study

To reduce the risk of failure it is necessary to decide whether the idea is feasible. This involves carrying out a short market survey and feasibility study. The following are the stages of a feasibility study:



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## Market feasibility

The first stage is to collect as much information as possible on the potential market for the products you intend to make. This is achieved by carrying out market research, usually in the form of a market survey of the target population in the area you intend to sell the product.

### I. Market research: the necessary steps of market research are as follows:

#### a. Work out the size of the potential market:

What is the potential market area?  
Who will be the potential customers?

**What are the potential outlets?**

Who will be the competitors?

How much of the product can be sold? (what quantities of the product are already sold and what quantities of similar products are being sold?)

What is the seasonality of demand?

#### What is market research?

Market research is the process of investigating a market to find out the sales prospects for a product and how to achieve success with it. It is the set of activities necessary to obtain the information required about the market. Market research activities include the following:

- Consumer questionnaires
- Tasting tests to see if people accept the product or which taste they prefer
- Interviews with retailers and wholesalers.

Market research is important to avoid the failure of food processing ventures.

#### b. Research consumer attitudes towards the new products:

What, where and when do consumers buy?

What are consumers' preferences about tastes, smell, texture etc?

What is the consumers' reaction to packaging and labelling?

#### c. Find out how the new products can be made attractive to consumers:

What are the size units and prices of competing products according to location?

Where are quality weaknesses of the competition?

Which containers are used for competing products?

Which labelling is used by competitors and what are the legal obligations regarding label and contents?

#### d. Identify the most appropriate option for distributing products:

Direct to consumers?

To suitable retailers in an area?

To supermarkets (if sufficient quantities can be delivered)?

To wholesalers (suitable for larger processors)?

To institutions and the catering trade?

#### e. The factors to be considered in deciding on the marketing channel to use include:

Quantities processed and quantities required by distributors, transport and payment arrangements, margins and mark-ups

#### Notes on calculation to find the daily production rate

Estimated market size	14,240 kg/month
Estimated share of market	5%
Production required per month to meet market share	712 kg
Production required per day @ 20 days work per month	35.6 kg
Minimum process throughput @ 8 hours per day	4.5 kg/hr

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## II. Market Share

Estimate the proportion of the total market that the new business could expect to have (likely market share)

## III. Scale of Production

Once you have found information about potential customers, their requirements and the likely share of the market that could be obtained for a new product, it is necessary to calculate the monthly and daily production required to meet that demand (see example).

The figure for the daily production rate is central to all following calculations of production capacity and investment requirements and therefore should be as accurate as possible.

## Technical feasibility

After calculating the scale of production needed to supply the estimated likely share of the market. It is necessary to assess whether production at this scale is technically feasible. The following steps have to be taken:

- Identify the raw material supply, their quality and buying costs
- Identify production location and product quality
- Identify price and price seasonality
- Research sources and costs of services (fuel, water, electricity etc) and other processing inputs
- Identify sources and costs of packaging and label design
- Identify distribution procedures to retailers or other sellers
- Research availability of information and expertise to ensure that products are always made at the required quality
- Research availability and costs of the equipment needed
- Research availability of maintenance and repair costs of the equipment needed
- Clarify labour requirements, costs and availability.

To plan the different aspects of the production process, first put together a modified process chart showing the scale of operation and daily requirements for production (see the example at the end of the brief). This chart is used to identify the following;

- I. Weights of raw materials and ingredients that should be scheduled for each day
- II. Number and size of equipment required to achieve the planned throughput of product
- III. Number of packages that are required each day
- IV. Number of workers and their different jobs.

### I. Weights of raw materials and ingredients

The different steps to identify the weights of raw materials and ingredients are as follows:

- Experiment with different mixes of ingredients to produce a product that has the colour, flavour, appearance etc that the consumers like. Weigh each ingredient carefully and record all weights for each formulation tried.
- Develop a successful formulation. Take care that it is always made in exactly the same way.
- Experiment with different varieties of fruits and the particular process that is being used to calculate the actual amount of losses (see also table showing typical losses during the processing of fruits).

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- Calculate the amount of raw materials and ingredients that are needed to produce the required weight of product each day.

## II. Equipment required

Calculate the weight of food that should be processed at each stage (in kg per hour) using the process chart. Then decide on the type and size of equipment required. It is preferable to buy equipment from local suppliers because servicing and obtaining of spare parts should be faster and easier.

## III. Packaging

Decide on the type of packaging material and calculate the number of packages that are needed daily. Take into account the technical requirements of the product for protection against lights, crushing, air, moisture etc, the marketing requirements and the relative cost and availability.

## IV. Number and type of workers

Use the process chart to break down the production into different stages and then decide on the number of people need for each stage of the process. Include tasks such as store management, quality assurance and book-keeping.

Each day's work will initially involve preparation of the raw materials and then move through processing and packaging. You can have all workers doing the same type of activity throughout the day but it is often more efficient to distribute different jobs to each worker as the day progresses.

## Financial feasibility

After completing the technical feasibility study, you should have sufficient information to determine the costs involved in production. Additionally, the market survey will have supplied information about the sale price that could be achieved for the new product. You can now calculate the expected income and expenditure and the gross profit that can be achieved.

### I. Start-up costs

Calculate the start-up capital and initial working capital to determine whether your savings (also known as *equity*) will be sufficient to start the business. If not, a loan may be needed from a bank or other lender.

### II. Operating costs

Calculate your fixed and variable operating costs in advance based on the likely market share. If a loan is taken, the costs of repayment should be included in the fixed costs.

#### What is gross profit (or loss)?

This is the difference between the expected income and the total operating costs over the first year, including any loan repayments. Income is calculated as follows:

**Income = selling price per unit x number of units sold**

### III. Income and profit

Calculate the expected sales and income using information from the market survey. The income depends on both the price of a product and the amount that is sold.

Typical losses incurred while processing fruits	
Process	Typical losses (%)
Washing fruits	0-10
Sorting	5-50
Peeling	5-60
Slicing/dicing	5-10
Batch preparation/weighing	2-5
Boiling	5-10
Drying	10-20
Packaging	5-10
Accidental spillage	5-10
Rejected packs	2-5

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### **Setting the price of the product**

The correct price is important to be able to enter the market and to sell the product at a profit. There are two approaches:

- a. Base the price on production costs and set it to ensure that income exceeds the total costs
- b. Take into account competitor's prices and set the price of the new product at or below the price of similar products. Don't forget to include the profit expected by the wholesaler or retailer.

#### **What is the breakeven point?**

This is the production level at which the total costs will equal the total income if everything produced is sold. The breakeven point is calculated as follows:

$$\frac{\text{Fixed costs}}{\text{Revenue} - \text{Variable costs}} = \text{Production level at breakeven point}$$

## **IV. Financial planning**

If the gross profit indicates that the proposed business venture is likely to be successful, you still need to carry out a cash-flow analysis:

1. Compile a table (see example) showing sales incomes and expenses on a monthly basis for the first year. Work out when you have to spend money for equipment, raw materials and employees and when you can expect to be paid for your deliveries.
2. Calculate the monthly profit or loss by subtracting the expenses from the income. This will show when there are profitable months or when a loss is expected and further loans are needed.
3. Prepare a similar table for the next two years, taking into account increases in price, changes in sales and the action of competitors.

<b>Cash-flow plan</b>			
	Jan	Feb	Mar
<b>Cash beginning of the month</b>			
Cash in from sales			
Any other cash in			
<b>TOTAL CASH IN</b>			
Cash out for staff costs			
Cash out for operation costs			
Any other cash out			
<b>TOTAL CASH OUT</b>			
<b>Cash at end of month</b>			

The production level should be above the 'breakeven point' for the business to be profitable. If this is not the case, you should examine the data to see if production costs can be reduced. If not, you should forget the idea and start again with a different product.

It is important to carry out a cash-flow analysis to ensure that the cash you plan to put into the business will be enough to meet your needs on a continuing basis.

- Will you spend all your available cash before you are earning any revenue?
- Will you be able to pay your bills?
- Will you be able to buy raw materials and ingredients?

If not, you are likely to have problems, even if your earlier calculations have shown that the business will be profitable.

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**Example:** Modified process chart for production of tamarind pickle.

This chart shows the scale of operation and daily requirements for production, including quantities of raw materials needed, capacity of equipment and number of workers to complete the required production level in one day.

For the production of approximately 35.6kg pickle, about 45kg tamarind pods are needed.

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Modified process chart showing scale of operation and daily requirements for processing of tamarind pickle:							
Processing stage	% losses	Weight of fruit (kg)	Weight of other ingredients (kg)	Batch size (kg)	Processing time (minutes)	No of workers	Minimum equipment size (kg/hr)
Tamarind pods		45					Scale
Crack and remove shells and fibres	11	40			240	2	Table or canvas cover for 2 workers, plastic bowls, containers
Remove seeds	34	26.4					
Add sugar	5	26.4	26.4	50.2		1	Scale
Add spice mix	5	26.4	13.0	60.0			Mortar and pestle
Boil	34			39.6			Cooker or stove, 12-15l boiling pan, wooden spoon
Fill and seal	10			35.6	180	2	Table, measuring jug, jars and lids (or plastic bags), capping or sealing machine
Cool and label				35.6	120	1	Labels and label gummers
Store				35.6			Cool, dark room, shelves
Weight of product				35.6			
Notes on calculations:							
<b>Capacity of boiling pan</b>							
If each batch takes approximately 30 minutes to boil, 1.5 batches can be prepared per hour. In order to meet the production target of 60kg raw material, yielding 35.6kg of product every day, 4 hours are needed to prepare 6 batches of 10kg each. The boiling pan should therefore have a capacity of 12-15 litres.							
<b>Cracking and removing of shells, fibres and seeds</b>							
It requires 8 man-hours to shell and de-seed 45 kg fruit. Two workers are needed to complete this task in 4 hours. Since tamarind pulp can easily be stoned without deterioration, the cracking and removing of shells, fibres and seeds could be carried out in advance.							
<b>Filling and sealing of bags</b>							
Each worker can fill and seal 40 jars or bags of 150g weight per hour. 35.6kg produces 237 bags of jars. Two workers are needed to complete this activity in 3 hours.							

Activity chart used to plan allocations of staff to produce tamarind pickle		Hours during working day									
Activity		8	9	10	11	12	13	14	15	16	17
Cracking/removing seeds		X, Y	X, Y	X, Y	X, Y	L					
Mixing/boiling				Z	Z	U	Z	Z	Z		
Filling/sealing						N	X, Y	X, Y	X, Y	X, Y	
Labelling		Z	Z			C					
Cleaning						H				Z	Z
Store management										Z	Z
Distribution										M	M
Management		M	M	M	M		M	M	M	M	

X,Y,Z = permanent workers; M = manager and owner of the enterprise

Ref: Technical manual for small scale fruit processors, ICUC.

## Preparation of a business plan

Once the feasibility study has been completed, a business plan can be prepared. The business plan is a useful tool to help you manage, run and expand the business. It is essential if you want to borrow money from a bank or building society as they will ask to see your business plan before offering to lend you money.

Write down the results of the feasibility study. This helps to clarify and focus your ideas and to make the mistakes on paper rather than during the operation of the business. The information in the business plan will help you make decisions on the following:

- Whether the business will work successfully
- The demand for the product
- The resources available to produce the product at the right quality and for the right price
- Whether the business will be profitable
- Whether a loan is needed and if so, how much and when

A well prepared business plan will also help you to get a loan.

### How to write a business plan

The results of the feasibility study need to be written down in a simple, concise way to show bankers or other lending agencies that the business is carefully planned. The different steps are as follows:

1. **Introduction:** Summarise what the product is, who the customers are and why the business is a good idea.
2. **Basic information:** name and address of the business, the owners, their qualifications and experience.
3. **Information on the product:** details of the raw materials, the production process, quality assurance, packaging etc. What is special about your product?
4. **Market:** potential customers and where they are located, size and value of the market, expected market share, likely expansion (or contraction) of the market, number and types of competitors, their strengths and weaknesses and their expected reactions to a new product.
5. **Selling plan:** distribution and sales methods, planned promotion, product cost.
6. **Premises/equipment needed:** location of the business, building to be used and services needed, steps taken to meet health and hygiene laws, equipment and its costs.
7. **Finance:** amount needed for start-up and initial operation, profit and loss statement and cash-flow forecast for three years, own resources that will be used, size of loan required and what it is for, security on the loan.
8. **Plans for the future:** objectives of the business and expectations for the next 3-5 years.

## References and sources of information

**Technical Manual for Small-scale Fruit Processors.** A publication of an ICUC (International Centre for Under-utilised Crops) project, funded by the Forestry Research Programme (FRP) of the UK Department for International Development (DFID)

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**Market information services: theory and practice.** A Shepherd, 1997. FAO Agricultural Services Bulletin 125. FAO, Rome, Italy.



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