NATIONAL OPEN UNIVERSITY OF NIGERIA

MBA 883

Small Business Management

Module 3

MBA 883 Small Business Management Module 3

Course Developer/Writer
Leon Ikpe, National Open University of Nigeria
Course Coordinator
Dr. O. J. Onwe, National Open University of Nigeria
Programme Leader
Dr. Osoba Samson B., National Open University of Nigeria

Credits of cover-photo: Mr. Gbenga Aiyejumo, National Open University of Nigeria.

National Open University of Nigeria - 91, Cadastral Zone, Nnamdi Azikiwe Express Way, Jabi, Abuja, Nigeria.

www.nou.edu.ng centralinfo@nou.edu.ng
oer.nou.edu.ng oerunit@noun.edu.ng OER repository
Published in 2021 by the National Open University of Nigeria

Unit 1 The Financial Plan

1.0 Introduction

In the last Module, we discussed the marketing plan which addresses key issues concerning the marketing plans of a small business and how the plan should be structured. In this unit, we shall discuss the financial plan which is a very crucial component of a business plan.

2.0 Objectives

At the end of this unit, you will be able to:

- state clearly the meaning of a financial plan.
- discuss the key components of a financial plan.

3.0 Main Content

3.1 The Financial Plan

As we have discussed in our earlier units, a business plan is a document that sets out what a business is going to do and how it is going to do it. As we have continued to say, the business plan is a large picture made up of smaller plans or pictures. One of those plans or pictures is called the financial plan.

The financial plan addresses all the key issues relating to the financing of the small business. In practical terms, it does appear that the financial plan is the most important of all the plans because in the first place, it clearly shows the would-be-entrepreneur the total financial picture of a project in terms of total project cost, financial inflows and outflows.

Again as you are aware, banks when called up to finance a project are usually interested in the financials of the project. The banks want to know every detail of the financial implications of the project being submitted to them for appraisal and lending of funds. Banks want to know what the profitability of a project will be and besides, the cash flows.

The financial plan is expected to capture all this information and provide them in a manner that the other third parties can read them. By the third parties, we mean either the banks or the would-be-investors.

Self-Assessment Exercise

Name three parties that you think make use of a financial plan for decision making.

3.1.1 Contents of a Financial Plan

To explain the standard acceptable contents of a financial plan, we shall list out the contents and then go ahead to present a practical example of a plan. The following are contents of a financial plan.

- Estimates of Project cost including Land, Buildings and things like steel structures

- Utilities - costs
- Machinery and equipment costs
- Pre-operational expenses
- Working capital requirement
- Financing plan
- Projected income statement
- Projected cash flow statement
- Projected balance sheet.

Practical Example of a Financial Plan

A company is engaged in the extraction of palm kernel oil (PKO) from palm kernels. The company now plans to add a vegetable oil refining plant to its operations so that it can convert the palm kernel oil (PKO) to vegetable oil through refining.

The company has approached a bank to help it finance the acquisition of the vegetable oil refining plant. Below is the financial plan of the proposed plant.

You are please requested to study the plan carefully and ensure that you understand it very well.

Financial Plan

The objective of the financial plan is to determine the financial outlays and inflows of the project with a view to establishing the commercial viability of the proposed venture. To be able to do this, the following should be established:

- Start up costs for the project
- Revenues of the project
- Expenditures of the project
- Profit and loss profile of the project.

Estimates of Project Cost		**N**
LAND FOR THE PROJECT		4,000,000
Civil works and foundations		5,000,000
Steel Structures		
Includes H Beams, U Channels,		
Angles, checker plates, Railing pipes,		
Roofing materials		13,000,000
Total Land, Building and Steel Structures		**22,000,000**
Storage Tanks		
2 Units crude oil tank - 200 tons	-	3,000,000
1 Unit refined oil tank – 300 tons	-	2,000,000
1 Unit fatty acid tank – 50 tons	-	850,000

1 Unit water storage tank - 20 tons	-	750,000
1 Unit Furnace oil tank – 20 tons	-	750,000
1 Unit diesel storage tank - 20 tons	-	750,000
Sub Total	**=**	**8,100,000**
Utilities		
1 Unit 500 KVA Transformer	-	3,500,000
1 Unit 500 KVA generator	-	10,000,000
1 Unit water bore hole	-	500,000
Sub Total	**=**	**14,000,000**

Proposed Financing Plan (=N=)

	PROJECT SPONSOR	**BANK**	**TOTAL**
Land, building and steel structures	9,000,000	13,000,000	22,000,000
Machinery and Equipment	20,800,000	77,940,000	98,740,000
Storage tanks	-	8,100,000	8,100,000
Utilities	14,000,000	-	14,000,000
Pre-operational expenses	1,450,000	-	1,450,000
Sub – Total	45,250,000	99,040,000	144,290,000
Working Capital	30,617,994	-	30,617,994
Total	**75,867,994**	**99,040,000**	**174,907,994**

Contribution Ratio

Project	=	43.3%
Bank	=	56.7%
Total	=	100%

Schedule of Financial Assistance Required

Financial assistance is required from the bank to be applied as follows:

			N
1.	Construction of steel structures to house the vegetable oil plant	=	13,000.000
2.	Contribution towards purchase of the vegetable oil refining plant	=	77,940,000
3.	Contribution/purchase of storage tanks	=	8,100,000
	Total	**=**	**99,040,000**

Projected Loan Disbursement: 1/11/2006

MORATORIUM: 6 Months from disbursement to enable plant to be delivered on site plus commissioning.

Projected 1st Repayment due date:	30/4/2007
Quarterly Loan Repayment:	N8,674,693
Interest rate:	10% per annum with quarterly rest.
Expected date of last installment:	31/12/2009

Financial Projections

The financial forecasts and projections have been arrived at on the following bases and assumptions:

Bases

1. The forecast includes results as shown by the financial statements for the year ended 31st December 2005.

2. The audited financial statements for the six months ended 31st December 2005 and the projections for the year ended 31st December 2007 have been prepared on a basis consistent with the accounting policies normally adopted by the company.

Assumptions

1. **PROJECT YEAR:** Year 1 of the project is the year 2007

2. The loan of N99, 040,000 will be disbursed at about the first week of November 2006. The impact of the Loan therefore on revenues will begin to show in year 2007, which is regarded as the 1st year of the consolidated project.

3. The vegetable oil plant will commence operations latest on 1st April 2007 and working on 2 shifts /day. If the production plan for the year 2007 appears threatened, the plant will operate at full capacity to cover anticipated production gaps in year 2007. From year 2008 and beyond, the plant will run according to the production plan.

4. There will be no significant changes in Government regulations that will affect labour costs and other operating expenses besides the ones in force in year 2006.

5. There will be no drastic change in the political and economic climate of the country that will adversely affect the operations of the company.

6. Government will continue to see the need to protect local manufacturers from foreign invasions.

Depreciation

Depreciation of depreciable fixed assets is calculated to write off the book value on the straight line method at the following rates:

ITEM	%
Land and Building	2.5
Motor vehicle	15
Furniture and Equipment	10
Plant and Machinery	10

Project Implementation Schedule

Loan Application and approval:	14 weeks from June 2006
Loan approval and disbursement:	Latest date 1/11/2006
Plant and Machinery arrive Nigeria:	Latest End of February 2006
Installation and test run of plant:	March 2007 (4 weeks)
Plant commences operation:	Latest 1st April, 2007

Revenue Projections

From the proposed production plan, the following is the revenue profile for the project in year 1 (Year 2007)

Projected Year 1 Revenues

PRODUCT	QUANTITY SOLD (TONS)	PRICE PER TON N	TOTAL REVENUE N
Refined Vegetable Oil	12,498	145,000	1,812,210,000
Palm Kernel Cake (PKC)	18,418	5,000	92,090,000
Palm Kernel Sludge (PKS)	1,315	4,000	5,260,000
Fatty acid	657.84	100,000	65,784,000
Total			**1,975,344,000**

Year 2 Revenues are same as year 1 Revenues,

Year 3 Revenues are projected to increase by 5% over year 2 revenue due to increase in selling prices occasioned by increase in raw material inputs prices.

Year 4 Revenues are same as year 3 revenues

Year 5 Revenues are projected to increase by 5% over years 3 & 4 due to increase in raw material input prices.

Summary of Projected Revenues

	Revenue (N)
Year 1 - (2007)	1,975,344,000
Year 2 - (2008)	1,975,344,000
Year 3 - (2009)	2,074,111,200
Year 4 - (2010)	2,074,111,200
Year 5 - (2011)	2,177,816,760

Production Materials and Their Costs

Cracked palm Kernel	N45, 000 per ton
Bleaching earth	N88, 000 per ton
Citric acid	N200, per kg
Phosphoric acid	N300 per kg

Vegetable Oil Packaging Costs

The refined vegetable oil will be sold in two ways:

1. Direct to vegetable oil distributors who will purchase the vegetable oil in tanker loads. In this case, the vegetable oil tankers will come and load vegetable oil at the factory.

2. The refined vegetable oil will be filled into plastic jerry cans of 9 litres and 18 litres capacity and also sold to the market. The purpose of this is to ensure that the brand of vegetable will be in affordable units and prices to the market.

PROJECTED TRADING, PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED 31st DECEMBER

	2007	**2008**
Sales	1,975,344,000	1,975,344,000
Opening Stock	30,000,000	40,000,000
+ Cost of Manufactured goods	1,576,320,178	1,588,266,114
Less Stock at Close	40,000,000	50,000,000
= Cost of Sales	1,566,320,178	1,578,266,114
Gross Profit	409,023,822	397,077,886
DEDUCT		
Selling and distribution expenses	10,265,716	10,336,014
Administrative expenses	32,263,476	28,557,671
Total Expenses	42,529,192	38,893,685
Profit before tax	366,494,630	358,184,201
Tax provision	117,278,281	114,618,944
Profit after tax	249,216,349	243,565,257

PROJECTED CASH FLOW STATEMENT (N)

	2007	2008
SOURCES OF CASH		
Earnings before interest & taxes	382,494,630	370,184,201
Depreciation	19,137,615	19,137,615
Total sources of cash	401,632,245	389,321,816
USES OF CASH		
Loan Repayments	26,024,079	34,698,772
Interest and Bank Charges	16,000,000	12,000,000
Taxation	117,278,281	114,618,944
Total uses of cash	159,302,360	161,317,716
Cash Surplus / (Deficit)	242,329,885	228,004,100
Opening Cash Balance	10,000,000	252,329,885
Closing Cash Balance	252,329,885	480,333,985

PROJECTED BALANCE SHEET (N)

	31/12/2007	31/12/2008
ASSETS EMPLOYED		
Net Fixed Assets	198,538,111	179,689,096
INTANGIBLE ASSETS		
Preliminary expenses	55,000	55,000
CURRENT ASSETS		
Stock-in-trade	180,000,000	290,000,000
Raw Materials	140,000,000	300,000,000
Debtors & Prepayments	60,012,378	70,000,000
Cash and Bank Balances	12,000,000	7,767,313
TOTAL	**392,012,378**	**667,767,313**
CURRENT LIABILITIES		70,000,000
Creditors and Accruals	53,000,000	14,000,000
Bank Overdraft	15,000,000	114,618,944
Tax Provisions	117,278,281	**198,618,944**
TOTAL	**185,278,281**	469,148,369
Net Current Assets / (Liabilities)	206,734,097	1,000,000
FINANCED BY	1,000,000	
Share Capital		584,596,479
RESERVES	341,031,222	63,295,986
Profit and Loss Account	63,295,986	
Directors Current Account		
Shareholders Fund	**405,327,208**	**648,892,465**

4.0 Conclusion

In this unit, we have discussed the financial plan and we went ahead to use a practical example to demonstrate what the financial plan should look like in real life. For our real life example, we used a vegetable oil refining plant. We did also advise that you study the worked example carefully so that you can understand a financial plan properly.

5.0 Summary

We have fully seen that the financial plan is a very important document both for the entrepreneur and the bank that is expected to finance a would-be-project. It brings out all the fine details of a project as far as finance is concerned.

In the next unit, we shall discuss the economic plan.

6.0 Self Assessment Exercise

Discuss the key users of a financial plan and why they are interested in the financial plan.

7.0 References/Further Reading

Leon Ikpe (1999) A guide to Small Business Investments. Impressed Publishers, Lagos.
Leon Ikpe (1999): Project analysis and evaluation. Impressed Publishers, Lagos.

ANSWERS TO SELF ASSESSMENT EXERCISES

The three parties that make use of a financial plan are:

1. The would-be-entrepreneur
2. The financier e.g. a bank
3. An investor who is being asked to invest in the project.

Unit 2 The Economic Plan

1.0 Introduction

In the last unit (Unit 9), we discussed the financial plan which we say addresses key issues concerning the finance of a would-be-business enterprise. We even used an example of a vegetable oil plant to demonstrate a practical example of a financial plan. In this unit, we shall discuss the Economic plan which is again a very crucial component of the business plan.

2.0 Objectives

At the end of this unit, you will be able to:

- explain the meaning of the economic plan.
- discuss the key components of the economic plan.

3.0 Main Content

3.1 The Economic Plan

All along we have tried to dissect a business plan and by so doing, we broke the business plan into a number of smaller plans like the marketing plan, the financial plan etc.

When we discussed the financial plan, we set out to examine and evaluate certain things like cash inflows and outflows. At the end of the day, the financial plan discloses whether a would be small business will be profitable or not.

However, when we are discussing revenues and costs in naira terms, we are simply considering the thinking of an investor or bank. Most of the items in the financial plan are micro elements as far as an economy is concerned. What we are saying is that the financial plan is a micro view of a project from an investors narrow view point.

The Economic plan unlike the financial plan considers projects from a macroeconomic view point as opposed to a micro view point. The economic plan looks at the business from the total view in terms of planned impact on the macroeconomic environment.

3.1.1 Economic and Financial Analysis (A Comparison)

The financial plan tries to see a would-be-project from an investor's view point. That is essentially a micro view. In the alternative, the economic plan tries to see a would-be-project from a national view point or best still, a macroeconomic view point.

Both financial and economic plans are talking of resources and how the resources will be allocated. Both of them seem to be concerned with resource allocation problems. In the end both the financial plan and the economic plan seek to provide answers as to whether an investment project will be undertaken or not. However, there are differences between the financial and Economic plan.

We will stress from the onset the fact that they differ in their underlying objectives. The financial plan arranges resources without any consideration of the society in which the would-be-business will be located.

On the other hand, the Economic plan tries to arrange or display resources with full consideration of the impact of a project on the entire society.

Another important point to note is that both the Economic plan and the financial plan try to evaluate a project in terms of benefits and costs. But the definition of costs and benefits differ between the financial and economic plan.

In the financial plan, costs and benefits are usually reduced to Naira and Kobo terms. But in the economic plan, costs and benefits go beyond naira and kobo terms. For example in the economic plan, costs are usually expressed in terms of opportunity costs or foregone costs to the society as a whole.

A Practical Business Idea for Class Discussion

Commercial Production of Laundry bar Soap

Laundry soap is used mainly for washing. It is found in every home, office and factory because of its importance. Although powdered soap and liquid soap are soaps found on the market shelf, laundry soap is preferred because it is not hard on textiles.

In the Nigerian market, manufacture of laundry bar soap used to be dominated by such big names as Lever brothers, PZ etc. However, in the wake of the structural adjustment programmes, a lot of small scale entrepreneurs have sprung up and are currently giving the big names a big fight. The advantage of the small scale producer is in the area of overheads and operational flexibility. The key to success in soap business is quality and lower prices.

Technical Information

The production of soap is a simple chemical reaction referred to as Saponification.

The simplest way to explain Saponification is to write the Chemical equation: oil (fatty acid) + caustic soda = soap + glycerol. Incidentally this equation is learnt at secondary school level chemistry and does not need extra clarification. The basic materials required for production of soap are palm kernel oil or palm oil, caustic soda, liquid sodium silicate, dyes and perfumes (where required). The basic equipment are the preparation tank, mixing tank, solidification boxes, soap slicer and soap stamper.

Production Process

There are three different methods employed in the production of laundry bar soap namely: the full boiled process, the semi-boiled process and the cold process. The cold process is the one discussed in this write-up. Caustic soda is dissolved in water in the preparation tank and left overnight. It is important that it stays for at least 24 hours to enable the chemical reaction to be completed. The specific gravity should come up to 13000 kg/m^3.

A measured quantity of palm kernel oil is put into the mixing tank. A measured quantity of caustic soda solution is added into the mixing tank and stirred properly for at least 10 minutes.

Then sodium silicate, soda ash in solution, dye are added in measured quantities. Stirring continues for another 10 to 15 minutes with perfume added if desirable. Pour the soap into the solidification boxes which have nylon underlay. Leave the soap to harden. After about 15 hours, you have a hard soap. With the use of the slicing machine the soap is cut into

shapes while the soap stamper affixes the name of the soap on it. The bar soap is packaged and ready for the market.

FINANCIAL HIGHLIGHTS	**N**
Pre-Investment Outlays	30,000
Rent / Accommodation	100,000
Machinery / Equipment	100,000
Utilities	30,000
Working Capital	100,000
Total Project Cost	360,000
Projected Year 1 Income	2,800,000
Projected Year 1 Expenses	1,400,000
Projected Year 1 Profit	1,400,000

	Have you covered this in the plan?
Will the project generate employment in the economy? If yes to what extent? No of skilled hands that will be employed Will the project lead to economic growth? Will the nation save foreign exchange if the project is undertaken? If yes what amount of foreign exchange? What are the forward and backward linkage effects of the project? Will the project lead to technological education? What are the social costs of the project to the economy?	

Table 10.1: Economic plan checklist.

3.1.2 Contents of an Economic Plan

So far, we have tried to understand what an economic plan is and how to distinguish it from the financial plan. We will now go ahead and discuss some of the key contents of an economic plan. By contents, we mean those items we hope to see inside the economic plan.

Transfer Payments

Generally, transfer payments represent the transfer of resources from one section of society to another. Remember that economic plans take macro views of a society into consideration.

An important transfer payment is interest. Basically interest is a reward for capital. For example, if a project is funded through bank borrowing, the estimates of interest charges are usually included in the financial plan. And so if you look properly you will see interest charges in the projected income statement. What resources (interest) that the project has

paid has been collected by another member of society (the bank). In this case, there is really no net increase of resources to the society as a whole. The interest is only a transfer of resources from a borrower to a lender.

So as the logic goes, in the economic plan, interest charges are excluded since they only represent transfer payments.

Taxes

Taxes are another set of transfer payments which we are going to look at. Taxes are paid out of profits and if a project is profitable, it will pay tax to the central authorities. That explains why in the computing of the net income of a project, taxation is usually deducted.

Taxes are therefore deductions before arriving at net profits of a business. However, in the economic plan, taxes represent transfer payments from a business to the Central Government. And so again as the logic goes, in the economic plan, taxes are excluded because they are only transfer of resources from one section of the society to another.

Subsidies

In evaluating a private sector undertaking, it will be difficult to hear of the word subsidies. This is because the private sector is largely profit driven. So in the financial plan of a private sector project, it will be unheard of to see the item called subsidies.

But this will be a different story if we are building the economic plan of a project. Most public sector projects are heavily subsidized to enable the poor gain access to certain goods and services which ordinarily they cannot gain access to.

Logically subsidies represent opportunity costs to the society as a whole. So in the economic plan, any subsidy so enjoyed should be added as part of the costs of a project.

Linkage Effects of a Project

Generally, linkage effects are those effects that arise from a projects initiation. For example when a polytechnic is located within a new environment, many things follow immediately.

New constructions start immediately. New shops spring up. Bookshops begins to spring up. Some industries begin to start-up in the environment to produce water, soap and other products which the students of the polytechnic will need.

Generally, there are two types of linkage effects broadly defined as forward and backward linkage effects.

Forward linkage is the stimulus given to manufacturing industries that use the products of a project. For example if a flour manufacturing plant is located in a town, it will lead to the establishment of bakeries that will use the flour. This is a forward linkage effect.

Similarly, flour manufacturing requires wheat as a raw material input. We can see that the establishment of a wheat flour manufacturing plant will invariably lead to increased cultivation of wheat. This is the backward linkage effect.

Self-Assessment Exercise

Name two transfer payments

A Global Example of Economic Analysis

In 1986, the World Bank was considering the desirability or otherwise of assisting Nigeria set up a rice farm covering thousands of hectares in a rice producing area of Nigeria. Under the scheme, farmers will be allocated large hectares of land for cultivation of rice subsidized to encourage the farmers. Such things like fertilizers will be heavily subsidized while technical advice will be provided by World Bank experts and Nigerian agricultural experts.

The forecast life span of the project is five years after which it is expected that diminishing returns will set in.

A financial analyst forecasts that the following is the incremental cash balances that will accrue to the farmers.

Year	Amount
1	- N300, 000
2	+ N600, 000
3	. + N700, 000
4	+ N800, 000
5	+ N900, 000

The subsidies to the farmers in the 5 years are expected to be as follows:

Year	Amount
1	N50,000
2	50,000
3	30,000
4	50,000
5	60,000

Also although technical advice is to be provided by World Bank experts and their Nigerian counterparts, below is the value of the technical advice when reduced to monetary naira values.

Year	Amount
1	N40,000
2	40,000
3	60,000
4	30,000
5	20,000

Because the farmers are expected to pay tax as other citizens do, the financial analyst in arriving at the incremental cash balances due to the farmers already had deducted the tax due from them. The estimates of taxation are reproduced below.

Year	Amount
1	- N10,000
2	N60,000
3	N70,000
4	N80,000
5	N90,000

The cost of the rice project initially is N1, 000,000 to enable the project take off. Although the lending rate for agriculture projects is 9%, it is considered that the real opportunity cost of capital is 13%. Should the project be acceptable?

Solution

Although a variety of methods exist to appraise the project, the most favoured method is the net present worth method. As earlier explained.

NET PRESENT WORTH = Present Worth Present Worth **Less**
of Benefits of Costs

a. Subsidies represent outflows of cash to the economy as a whole and so constitute costs of the project. They now appear as negative entries to denote cash outflow.

b. Taxation is added back because it represents a transfer payment from the farmers to the government. It is to be recognized that the taxes arise because of the rice project. The negative tax entry in year one is the tax foregone as a result of the rice project.

c. Technical advice also constitutes a use of resources and has to be clearly recognised as an outflow of resources.

4.0 Conclusion

In this unit, we have discussed the Economic plan. We also discussed the differences between the financial plan and the economic plan. So that while the financial plan focuses attention on purely private sector initiatives like profits etc, the economic plan focuses attention on how projects affect the macro environment. We also discussed transfer payments. All these helped us to understand the economic plan.

5.0 Summary

We have just discussed the economic plan and seen how important it is in understanding the general business plan. Economic plans try to adjust financial plans which are mainly private sector plans. Economic plans reflect a macro approach to planning.

In the next unit, we shall discuss managing manufacturing operations.

6.0 Self Assessment Exercise

The financial plan differs significantly from the Economic plan. What are the differences between them?

7.0 References/Further Reading

Leon Ikpe (1999) A guide to Small Business Investments. Impressed Publishers, Lagos.

Leon Ikpe (1999): Project analysis and evaluation.

Impressed Publishers, Lagos.

ANSWERS TO SELF ASSESSMENT EXERCISES

Two transfer payments are:

1. Interest charges
2. Taxes.

Unit 3 Managing Manufacturing Operations

1.0 Introduction

In the last unit (Unit 10) we discussed the Economic plan which we said is a part of the total document called the business plan. In this unit, we shall discuss managing manufacturing operations. Small businesses come in various sizes and forms. Some are service organizations. But a lot of them are small manufacturing businesses producing such items like sachet water, bread, soap, detergents, cosmetics etc.

We shall now focus attention on how the manufacturing operations should be managed.

2.0 Objectives

At the end of this unit, you should be able to:

- Understand the nature of manufacturing
- Discuss management of manufacturing operations.

3.0 Main Content

3.1 Managing Manufacturing Operations

As we have said, there are various forms of small business organizations in the economy. Some are service organizations while some are trading organizations. However, a good number of them are manufacturing organizations that manufacture a wide range of goods in the economy. Managing manufacturing operations presents us with a basic framework that should be of use to the small business initiator. Managing manufacturing operations is a very challenging task especially where the entrepreneur has had no formal training in manufacturing.

In a lot of companies, a greater number of the labour force and assets of the company are tied to the manufacturing function.

3.1.1 The Nature of Manufacturing

Manufacturing is basically a conversion process. It involves converting raw materials into products which either serve as intermediate goods or they become consumer goods. In converting the raw materials into goods, plant and machinery are used. We will now critically follow some basic steps which will take us through the nature of manufacturing and the basic important things.

3.1.2 Manufacturing Facilities

We should understand that manufacturing does not take place in a vaccum. It takes place in a setting called a factory or a plant. In setting up a manufacturing facility, the entrepreneur

should be able to understand the standard requirements for efficient manufacturing operations. It is those things that we now want to look at.

Land

Our interest in land is because it is land that houses any factory or plant. The first thing about land is that the entrepreneur must ensure that the land acquired for the envisaged project will provide sufficient space to accommodate machinery and equipment, space for movement of vehicles in and out of the facility. Space should be provided for the buildings that will house the offices. In finer detail, we should make allowance for parking space within the manufacturing facility for loading and off loading of goods and materials.

Better still, the entrepreneur should also make allowance for a security post that will restrict and control access to the manufacturing facility. It will not also be out of place to recommend that the manufacturing facility should have a perimeter fence.

Factory layout

Another important aspect of manufacturing which should be properly addressed is the factory layout. The factory layout pays attention to how the machinery and equipment will be arranged to ensure smooth manufacturing operations. The factory layout should also take into consideration the production processes and also Government regulation. For example in sachet water and bottled water production, NAFDAC regulations are that the factory shall consist of the following which must be clearly demarcated.

a. Administrative office
b. Cloak room
c. Packaging materials Store
d. Production hall
e. Finished goods store
f. Production manager's office
g. Water treatment room.

Machinery and Equipment

We have just discussed factory layout. We shall now discuss machinery and equipment in manufacturing operations. Machinery and equipment as the name suggests are the necessary machines, equipment, tools etc that are used to manufacture goods. For example a sachet water manufacturing facility will require the following machinery and equipment.

- A comprehensive water treatment plant consisting of sand filters, activated carbon filter, iron filter, UV sterilizers with lamp.
- Automatic sachet water packaging machine.
- Nylon extruder for extrusion of nylon
- Water bore-hole with fittings like tanks
- Laboratory equipment, water test kits etc.

Apart from arranging the machinery / equipment, the entrepreneur should ensure that the correct equipment are sourced and installed to ensure smooth manufacturing operations.

Utilities

In planning an efficient manufacturing facility, the entrepreneur must properly address issues concerning utilities. The first utility we will consider is power. We require electricity to power the various machinery in a factory. In most cases, power from the public supply will be available but the supply will be erratic. Because power supply from the public source is usually erratic and unreliable, there is need for every manufacturing facility to have a stand-

by generator which will be used when the public power source fails. In the choice of generators, it is important to go for a generator capable of carrying the entire machines in the manufacturing facility.

Another important utility is water. Experience has shown that most manufacturing operations require water as inputs. A Cassava processing facility will need a lot of water so also will a cosmetics manufacturing facility. So depending on the goods to be manufactured, there is the need to sink a bore-hole in the manufacturing facility.

	Have you thought of this?
What machinery / equipment are needed?	
What are their specifications?	
Design of the machinery	
Construction e.g. body in carbon steel	
Installation materials – cables etc.	
Motor control centre	
Raw materials consumption	
Clean water requirements	
Pressure requirements	
Fuel oil requirements	
Compressed air requirement	
Installed power	
Electrical conductors	
Weighing arrangement for oil and chemicals	
Fire fighting equipment	

Table 11.1: Equipment / machinery and utilities check list

A Practical Business Idea for Class Discussion

Commercial Production of Liquid Soap

Liquid soap is used for laundry and cleaning purposes. In the home, it is used in cleaning tiles, floors, walls, utensils, and toilets. In the hospitals it is used for general cleaning and sanitation purposes. In industry, like beer manufacturing, it is employed in the lubrication of industrial machines. Put together therefore, it is clear that a very big market exists for this commodity. The main clients will includes house wives, restaurants, pepper soup houses, hotels, hospitals, corporate bodies just to mention a few.

Technical Considerations

The project under consideration is a liquid soap manufacturing plant that can be located anywhere in Nigeria. Working on a single shift of 8 hours per day, the plant can produce 400 litres of liquid soap. On three shifts of 8 hours each per day, a daily output of 1200 litres of liquid soap in achievable thus giving annual installed capacity as 438,000 litres of liquid soap. Attainable capacity is 90% of installed capacity i.e. 394,200 litres. However, this write-up is based on 666 litres of liquid soap per day and for 300 working days in a year. The required raw materials are palm kernel oil (PKO), caustic soda, ethanol and urea, soda

ash, builders and perfume. The key machinery / equipment required are the preparation tank (preferably made of stainless steel), boiler with stirrer, filling pipe, weighing scale.

PROPOSED FORMULA

Caustic soda	35%
Urea	4%
Ethanol	2%
TSPP or STPP	1%
Soda ash	2%
Perfume	as required
Water	to 100%

Production Process

Caustic soda is dissolved in water in the preparation tank and left overnight. It is essential that it is left for at least 24 hours to enable all chemical reactions to be completed. A specific gravity of 1200kg/m3 with water is considered adequate. Put the palm kernel oil in the boiler and heat gently for some time. Then add the caustic soda solution into the boiler while stirring. Continue to boil for some minutes. When the volume in the boiler rises, it signifies the end of the reaction. To this mixture add dissolved additives – urea, STPP or TSPP and turn off the heat. The soap in now ready for bottling and sale in the market in one (1) litre bottles.

3.1.3 Raw Materials Considerations

The next thing we shall discuss in managing manufacturing operations is the question of manufacturing raw materials. Raw materials are the key materials that will be converted to finished goods in the manufacturing facility. In the consideration of raw materials, we need to clearly identify the following:

- The type of raw materials required
- The quality of the raw materials required
- The suppliers of the raw materials
- The location of the suppliers of raw materials
- Relationship between the entrepreneur and the raw material suppliers.

There is the need to sound a note of caution here especially about raw materials. Entrepreneurs should realize that the quality of their products depends on the quality of the raw materials used. What this implies is that manufacturers must choose raw material suppliers carefully to ensure consistency in quality of output.

3.1.4 Production Processes

In managing manufacturing operations, the production processes must be clearly defined and managed. The production process describes the various stages and steps that raw materials

pass through before they come out as final products. We shall now use sachet water production to explain a standard manufacturing process.

Example of a Production Process

Manufacture of Sachet Water

From the incoming bore hole water supply, water is pumped into a raw water treatment tank. With the aid of a filtration pump, the water is now pumped into the treatment plant which is a composite installation consisting of industrial sand filter and carbon filter. The resulting water is collected in the treated water tank. From the treated water tank, the water is passed onto the production room through a route consisting of filters and ultraviolet water sterilizers. The water is passed into the automatic water filling machine. The water filling machine packs and seals the water in 60 CL sachets.

Self-Assessment Exercise

List four items you might find in a factory layout.

3.1.5 Management Functions in Manufacturing

In our discussion of managing manufacturing operations, we talked of things. We discussed manufacturing facilities like land, factory layout and machinery. We also talked of raw materials and production processes. We will now discuss how all these will be managed in a manufacturing set up. In managing manufacturing operations, the functions of the manager are:

- Planning which consists of objectives setting, formulation of policies and budgets. Planning also covers raw materials planning and output plans.

- Organizing which involves setting up an appropriate organization structure, job definitions, departmentalization.

- Staffing which involves recruiting and deploying staff to operations and placing superiors over subordinates to ensure a command structure.

Now working through the various heads of the operating units, the entrepreneur is able to manage the manufacturing operations of his business.

	Have you thought of this?
What will be the location of the business? What influenced your choice of location? Have you acquired land? What is the land space? Will it accommodate office and the machinery / equipment? What is your factory layout? Does it meet regulation needs? Utilities – electricity, water etc Machinery and equipment Product / products to be manufactured The production mix Raw materials Raw materials quality and sources Production process Planning and organizing Staff and management	

Table 11.2 Manufacturing management check list

4.0 Conclusion

In this unit, we discussed managing manufacturing operations. We discussed the nature of manufacturing and also took a look at manufacturing facilities like land, utilities and factory layout. We also saw a checklist for manufacturing segment. All these helped us to understand the management of manufacturing operations.

5.0 Summary

We have just discussed managing manufacturing operations. We saw that manufacturing operations design start from the land acquisition to equipment sourcing and deployment. It covers raw material sourcing, production process management and management control. In the next unit, we shall discuss managing service based operations.

6.0 Self Assessment Exercise

What are the basic items you expect to see in a small scale bread manufacturing facility located in your immediate location.

7.0 References/Further Reading

Leon Ikpe (1999) A guide to Small Business Investments. Impressed Publishers, Lagos.
Leon Ikpe (1999): Project analysis and evaluation. Impressed Publishers, Lagos.

ANSWERS TO SELF ASSESSMENT EXERCISES

The four items to be found in a factory layout are:

- Production hall
- Machinery and equipment
- Weighing scale
- Finished goods store.

Unit 4 Managing Service Based Operations

1.0 Introduction

In the last unit (Unit 3), we discussed managing manufacturing based operations. In this unit, we shall discuss managing service based operations. As we shall see shortly, service based operations differ significantly from manufacturing based operations and so we expect their management to be different.

2.0 Objectives

At the end of this unit, you should be able to:

- discuss service based operations
- explain management of service based operations

3.0 Main Content

3.1 Managing Service Based Operations

Service organizations provide various services for people. They may not really manufacture any good but they make services available. Examples of services are banking, Insurance, hair dressing, medical services, legal services etc.

Today's customers are becoming more sophisticated and more demanding. They are beginning to use their discretion and power to choose which bank to go to, or which insurance company to use. At the back of their mind, they compare the quality of services they receive and this influences their purchasing habits.

In managing service based organizations, entrepreneurs are increasingly aware of the demand for quality service by customers and of course know they must structure their operations in a way that they will be able to offer excellent services to customers. But before we proceed, let us briefly discuss operations management. It will help us design better operations management systems.

3.1.1 Operations Management Systems

Operations management generally is the study of concepts, procedures and technologies used by administrators, managers and employees in the operation of all organizations. The operations management system is therefore a fusion of operations management concepts, procedures, technologies and people who coordinate the system. Let us examine the operations management system by taking a look at the separate units that make up the system. The key units are Inputs, the conversion process, output and feedback.

Inputs to a production system basically consist of the resources that are used to produce the desired output. They will include such things as materials, capital equipment, labour and information.

The conversion process or creation process is the system of facilities and procedures that are used in the production of finished goods and services.

Output of a system is a reference to finished goods or services. After an output, we have what is known as feedback.

Feedback essentially is a system through which suppliers, outputs and customers are monitored for strategic planning purposes. Feedback will normally reveal the level of customer satisfaction. Feedback enables an organization take corrective action and remain in business.

Examples of Operations Management Systems

SYSTEM	INPUTS	CONVERSION PROCESS	OUTPUT	MANAGERS	FEEDBACK
Oil-refinery	Crude oil, energy equipment and labour	Chemical reaction	Petrol, kerosene and other products	Refinery manager	Chemical composition
Hospital	Patients, Doctors Nurses, drugs and equipment.	Surgery and drug administration	Healthy individuals	Hospital Managers Matron	Patients response or complications
Bank	Customers staff, equipment	Processing of bank draft	Bank drafts	Branch Accountants, Operating Managers	Length of bank queues
Insurance company	Customers insurance company staff	Processing of claims.	Claims payment	Claims manager	Time taken to get claims paid
Bank	Customers bank staff equipment	Processing of loan applications	Loan approval	Credit managers	Time taken between receipt of application and loan approval or rejection

Table 12.1: Examples of operations management systems

3.1.2 The Role of Operation Managers

Having briefly examined a model production / service system, we direct our attention to what the role of an operations manager should be in an organization. Put simply, the role of an operation manager is to identify his/her responsibility in meeting his / her organization's goals, clarify/amplify these goals with his/her surbordinates, allocate work tasks to various staff, motivate the staff and monitor their performance. **Planning, organizing, directing and control** are the key words. A good operations manager will ensure that;

- Services are produced in a manner that satisfies customers
- Staff are adequately motivated and developed
- His/her organization can adapt to changes in the operating environment.

Now let us examine some planning/decision making areas that are crucial in service delivery.

PLANNING AND DECISION-MAKING AREA	FUNDAMENTAL / KEY ISSUES
Product design and development	What type of product do we offer the customer, for example; Fixed deposit plus free Insurance
Facility Location and distribution	Where shall we locate our branches and why?
Process technology and automation	Will our postings be manual or computerized?
Process design and facility layout	What is the sequence for preparing a bank draft for a customer? What is the best way to serve customer (FIFO or LIFO).
Job design and human resources	How will staff interface with technology?
Materials requirement planning	What material do we need and what level should we have at all times?
	What is our cheque book re-order level?
Quality assurance	How long is the service queue

Table 12.2: Decision making areas in service delivery

3.1.3 Process Design and Facility Layout

We now proceed to examine a very important aspect in the operations management system. This is process design and facility layout. It is very important to note that the physical design of a facility affects to a great extent the productivity of the facility. The basic objectives of process design and facility layout studies are to ensure the following;

- Improved work flow
- Work control and quality measurement
- Improved staff morale by providing a good working environment

- Customer satisfaction.

The central objective of process design in operations management is to determine how the resources of an organization should be arranged and organized for **optimal benefits**.

Optimal benefits may mean different things to different organizations. To a bank for example, optimality could be a reference to the time a customer spends in the banking hall to get service. To be able to do a process design, we shall do a step-by-step analysis of the processes involved in delivery of a particular service. Consider for example a situation in a bank where a customer calls and requests to cash a cheque of N 100, 000, 00. We list below the processes involved from the customers' angle and from the bank angle. To aid our discussion, let us refer to the bank as **"Enjoyment bank".** In our example, the customer goes through six processes in the bank before leaving. In the bank also, the cheque of N100, 000.00 passes through ten stages before the customer is paid. These are the type of issues operations managers will be addressing.

Assumption; Only 1 paying cashier is available

CUSTOMER PROCESS	**BANK CASHIER PROCESS**
1. Enters the bank 2. Joins a fairly long queue 3. Drops cheque with cashier and collects Tally number 4. Leaves cashier area and goes to wait in the banking hall. 5. His/her tally number is called 6. Goes back to cashier and collects money 7. Leaves the bank	1. Collects cheque from customer. Inspects the cheque briefly. 2. Issues customer with tally number 3. Lodges cheque in the out-going tray Behind him/her 4. Blocking clerk collects the cheque and blocks same amount on the customer's account. 5. Clerk sends cheque to cash officer for signature 6. Cash officer signs and refers cheque to the the accountant whose limit is N50,000,00 7. Accountant signs and refers cheque to Manager 8. Manager signs and authorizes payment. 9. Accountant goes to vault to get N100,000.00 10. Cash officer collects N100,000,00 and hands over to cashier 11. Cashier pays customer

Table: 12.3 Cheque encashment process at Enjoyment bank (an old generation bank)

Self-Assessment Exercise

List four institutions whose products are described as services

A Practical Business Idea for Class Discussion

Laundry and Dry Cleaning Outfit

The advancement of the Nigerian society generally has had a great impact on the life styles of the population. Today in the home, both parents (man and wife) find themselves working for a living. As a result of this, little or no time can be squeezed out to do laundry work. With the explosion in the number of bank workers, oil companies employees, insurance workers, soldiers and a whole lot of others in the economy, demand for both laundry and dry cleaning services has become rather very encouraging for the articulate investor. It is on record that most suits worn by corporate men and women are usually dry cleaned and at higher cost to the users of dry cleaning services. On the average, it costs about N500 (averagely) to dry clean a suit along Awolowo Road, Ikoyi, Lagos. The better way of estimating dry cleaning services in Nigeria is to imagine the huge workforce in corporate Nigeria and their various laundry and dry cleaning requirements.

Technical Considerations

The project under consideration here is a modern compact customer driven laundry and dry cleaning outfit that seeks to provide service to the middle segment of the market. Working on a single shift of 8 hours, the outfit can process, 1,000 pieces of laundry items and 100 units of dry cleaning items. On a day of 3 shifts of 8 hours each, a capacity of handling 3,000 pieces of laundry items and 300 units of dry cleaning items is assured.

Although the real life performance of this project will be dictated by market forces, the financials of this project write up are based on a working output of 2 shifts per day and 300 working days in a year.

The key equipment required for the project include the following: Complete set of dry cleaning equipment, high speed and rugged washing machines (industrial models) dryers, laundry vats and racks. A dedicated water bore hole and stand-by power generating plant is a must if the project is to remain focused, dedicated and competitive in its market niche. The strategy of the business will be built around "quality" and low cost production competencies. To reach a wider segment of the target market, it is recommended that collection centres be established through reputable supermarket chains in the catchment market.

The collection centres will be paid commissions based on their daily collections.

FINANCIAL HIGHLIGHTS (= N =)

Pre-Investment outlays	100,000
Rent /Accommodation (2 yrs)	200,000
Machinery / Equipment	2,000,000
Utilities	500,000
Working Capital	200,000
Total Project Cost	3,000,000
Projected Year 1 Income	30,000,000
Projected Year 1 Expenses	26,000,000
Projected Year 1 Profit	4,000,000

3.1.4 Managing Service through Total Quality Management (TQM).

Whatever the nature of the service under consideration, let us restate and remind ourselves that the major objective of most organizations is to remain profitable and survive.

In the face of competition, only those organizations that retain their customers will stay afloat. Retention of customers again will assume that customers are satisfied. What is implied is that customer satisfaction is a central must for all organizations whether they are profit oriented or not. Total Quality Management (TQM) is a management concept that directs the efforts of all employees and managers of an organization towards customer satisfaction by continuous improvement of operations management processes. **Total** implies that everyone in the organization (driver, cook, clerk, supervisor, manager, director, managing director) must be involved in producing the final product or service for the customer. **Quality** means that the product or service to be delivered must meet the minimum acceptable standards (or exceed it through operations management) **Management** suggests that **TQM** will not evolve by accident. TQM is a carefully planned and **managed process** that involves the entire staff of an organization and its system.

In today's modern business environment, quality teaching can be traced to W. Edward Deming. In the 1940's, Deming was preaching quality to American firms but nobody seemed to listen to him. At the end of the Second World War, he was invited to Japan to help them improve quality. Today, the Japanese products are world class.

Deming in his teachings listed 14 points which can improve total quality. These are;

1. Management commitment to total quality management
2. Learn the new philosophy – be customer driven
3. Understand the purpose of inspection – for improvement of processes and cost reduction.
4. End price tag decision – don't buy inferior products and also use few suppliers.
5. Improve constantly
6. Institute training – proper tools and knowledge.
7. Institute leadership
8. Drive out fear – punishment.
9. Optimize team efforts
10. Eliminate exhortations – motivate staff

11. Eliminate quotas and MBO (management by objective)
12. Remove barriers to pride in workmanship.
13. Institute education – self development
14. Take action.

3.1.5 Dimensions of Service Quality

For most of the time, the attention of operations managers must be directed towards the maintenance and improvement of service quality. It is for this reason that we seek to examine the various dimensions of service quality.

(1) Time
How long does it take the customer to cash a cheque in the bank or buy an insurance policy.

(2) Completeness
You sell a bank draft to a customer but forget to write the amount of the draft in figures. This leads to the draft being dishonoured at the paying branch.

(3) Courtesy
Are your staff rude to customers?

(4) Consistency
Is your quality consistent? Or do you serve well today and badly the next day?

(5) Accuracy
(a) Instead of debiting your customer with N100, you debit him/her with N1000

(b) A customer pays for a comprehensive car insurance policy. But you carelessly write a third party policy for the customer.

(6) Mistakes
(a) Your customer travelling to London requests for a telegraphic transfer to enable her spend her holidays. She leaves the bank and travels to London. You prepare a **mail transfer** which will take 2 weeks for the money to get to her in London.

(b) A seven months pregnant woman is booked for **hiernia surgery**. The doctor now goes ahead to perform a **caeserian section** thinking it to be a case of foetal distress.

4.0 Conclusion

In this unit, we discussed managing service based operations. We discussed operations management systems and also the role of operations managers. We also discussed managing service through Total Quality Management (TQM) which we said is a carefully planned and managed process.

5.0 Summary

We have just discussed managing service based operations which we said tends to focus attention on the way service based organizations should be managed. We highlighted the fact that service based organizations should imbibe quality as a way of life. Delivery of service to customers should be quality based.

In our next unit, we shall discuss monitoring performance.

6.0 Self-Assessment Exercise

In service delivery, what do you understand by Total Quality Management (TQM)

7.0 References/Further Reading

Leon Ikpe (1999) A guide to Small Business Investments. Impressed Publishers, Lagos.
Leon Ikpe (1999): Project analysis and evaluation. Impressed Publishers, Lagos.

ANSWERS TO SELF ASSESSMENT EXERCISES

The four institutions whose products are described as services are:

1. Hospitals
2. Insurance companies
3. Banks
4. Universities