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**COST ACCOUNTING AND
ESTIMATES**

BACHELOR IN FOREIGN TRADE
THIRD YEAR (Erasmus students)

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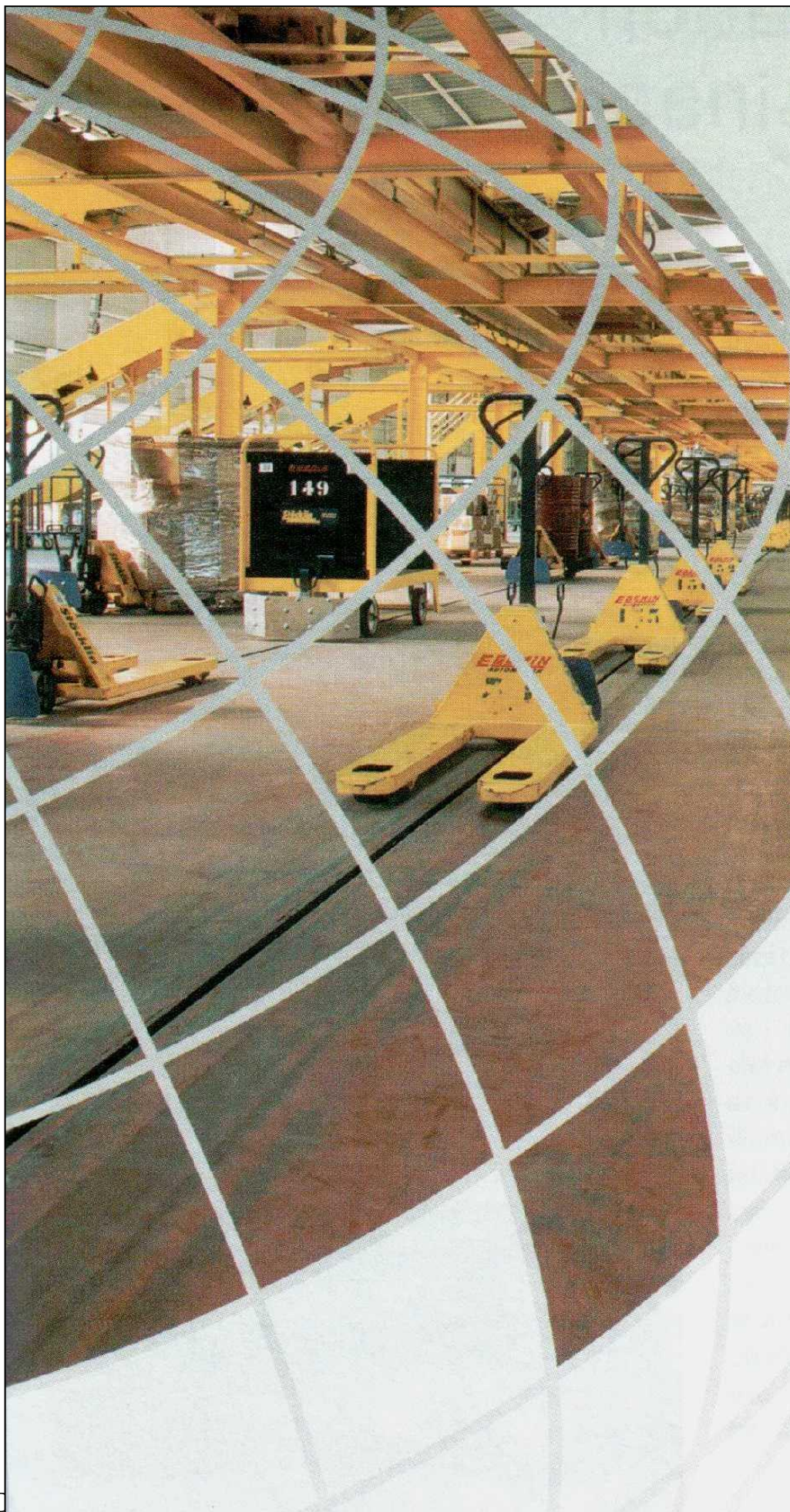


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PREAMBLE

Is it possible to produce and to sell by ignoring the cost price of its products or of its services, by misreading the specific rentability of its different activities?

Such adventure wouldn't make long fire, undoubtedly.

To know his cost price, it is to have a tool of management allowing to make decisions, to establish predictions, to analyse the gap with reality, in brief to pilot its firm to optimize result.

Trade policy and fixing of selling prices passes in general by the management of expenses. The financial contribution of every factor of production in the cost price of the product is measured and analysed in order to improve profitability.

The price components are mainly raw materials, labor cost, overhead costs that the company would incur to operate, the cost of investment and cost of financing, adding of course the cost of doing business that will generate sales.

Can we sell at any price ? Economic and conjunctures constraints, wages and commercial pressures restrict the margins of maneuver very often.

It became inevitable, for the administrator, to have tools of cost accounting and budgeting management.

An essential addition to general accounting, cost accounting is a management tool and a decision maker for different leaders of the company: Director, heads of department sales, production, maintenance,....

It is the basis of budgeting or forecast accounting (made with several simulations).

Our purpose, in this syllabus, is not to develop methods and accounting techniques in the strict sense which allow to hold these accountancies. A more deepened study would allow it. For the artisan or a big industrial firm, the same principles of analysis meet, but implementations are more or less worked out.

It is a question, for us, in this course of discovering the roads which lead where the administrator that you will be tomorrow in the analysis and on second thought. A product, a service must be sold. What is its cost? What are the components of the cost price, which is the profitability of this activity? What will be the budgeted result (profit)?

All these questioning based on calculations and simulations allowing us to choose the optimal solution.

« We don't read only figures but we need to understand them »

1. BASIC NOTIONS OF COST ACCOUNTING AND ESTIMATES

1.1. Cost accounting

DETERMINATION OF COST PRICES AND CALCULATION OF ANALYTICAL RESULTS

1.1.1. Concerned firms

1.1.1.1. Commercial firms

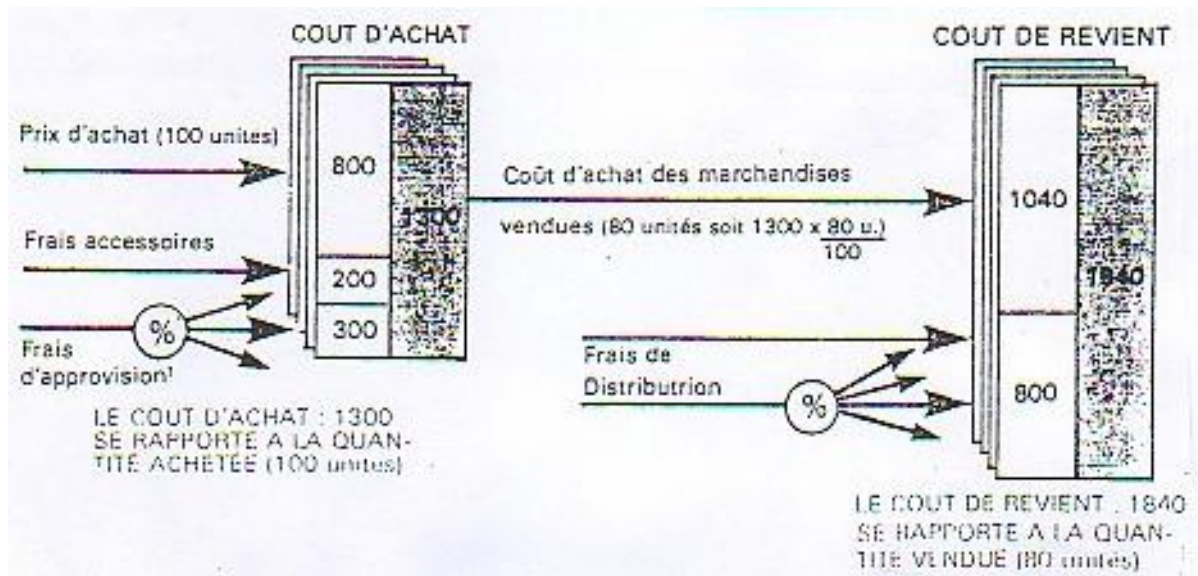
The activity of a commercial firm consists in buying and selling the goods or in providing services.

In this type of firms, main functions are :

- Purchase of goods (merchandises)
- Keeping in stock (of goods)
- Sale of goods (merchandises)
- Administration (overheads)

For instance, the objectives of cost accounting will be :

- in a store with numerous departments, to determine the cost of sales and the result (benefit or loss) by categories of products ;
- in a business company of transport, to determine the cost of the performed transport, the cost of the kilometre,...
- in a business company of software packages, to calculate the cost of putting computer programs in its place ;
- in a hospital, to measure the cost of different departments.



Here are some examples :

- the expenses of purchase are :
 - . transport,
 - . customs,
 - . remuneration of intermediaries
 - . reception and the control of the goods,
 - . accounting of the bills,
 - . verification of vendor (supplier) invoices,
- the expenses of sales are :
 - . preparation of sales : prices, catalogs, sales staff training ;
 - . sales promotion : advertising, promotion, fairs ;
 - . execution of the sales : prospecting, taking orders, monitoring deadlines, packaging, delivery, billing of the client ;
 - . action after-sales service : maintenance, spare parts, warranty.

1.1.1.2. Industrial enterprises

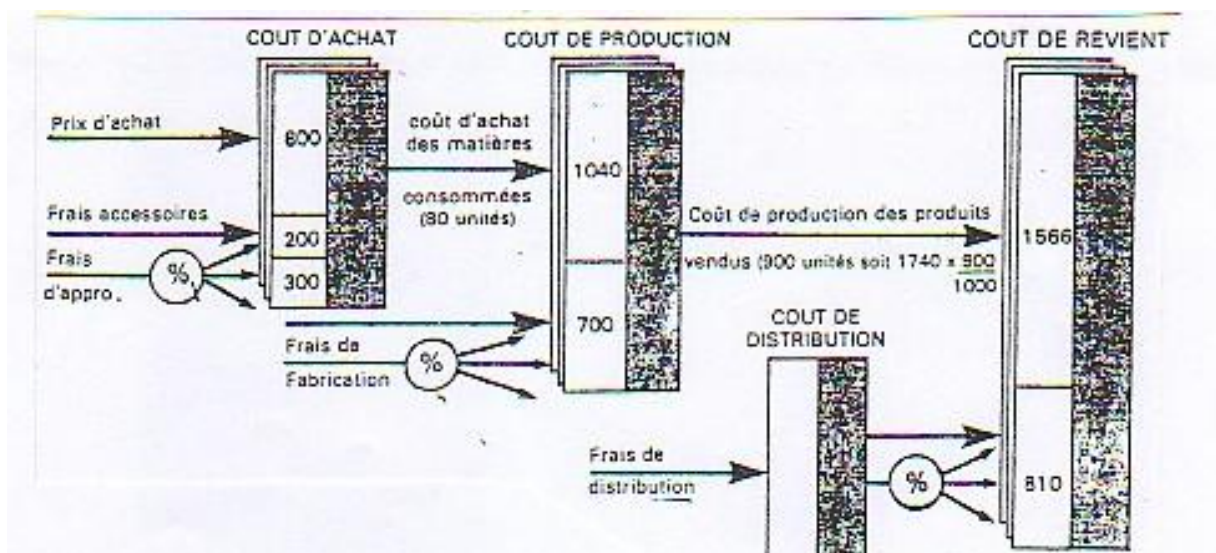
Industrial enterprises purchase raw materials, process them and sell the manufactured finished products.

Functions will be therefore :

Purchase of raw materials
Keeping in stock (of raw materials)
Manufacture of finished products
Keeping in stock (of finished products)
Sale of finished products
Administration (overheads)

The study will concern here the conditions of purchase of raw materials, the cycle of manufacture of products and the sales policy of the business company.

Let us signal that expenses of manufacture are related to the preparation of products, to their execution as well as in control and tries.



Difference between a commercial company and an industrial company :

Commercial company : Purchases of goods

Keeping in stock of goods

Sales of goods

Industrial company : Purchases of raw materials and consummables

Keeping in stock of R.M. and consummables

Production of F.P.

Keeping in stock of F.P.

Sales of F.P.

In summary, the cost accounting is an accounting which :

1. makes a series of calculations :
 - a. **of costs** (study of the expenses of purchase, manufacturing, sale, administration) ;
 - b. **of results(profits)** : the important being here to determine not only the global result(profit) of the company, but especially the results(profits) by products, by business sectors, by orders, by construction sites, by distribution networks...
2. realizes, on base of these calculations, analyses allowing to know the expenses, to follow their evolution, this to kick away the rates of profitability which will influence decisions of management.

1.1.2. Basic exercises of calculation of analytical results

1.1.2.1. COMPANY « DU BOIS »

The company makes wooden boxes and palettes.

These two finished products require the use of wooden boards (planks) as well as consummables (glue, nails, tubes,...).

The operations of manufacturing take place in a single workshop of cut and assembly.

Accounting information relative to September :

Stocks on 1/9 :

Wooden boards : 50 m² at 8,80 EUR/m²

Consummables : 0 EUR

Wooden boxes : 0 EUR

Wooden palettes : 200 palettes at 42,10 EUR/unit

Purchases :

800 wooden boards of 5 m² at 8 EUR/m²

Consummables : 17 000 EUR

Production :

1 400 wooden boxes

950 wooden palettes

We know besides that a box uses 2m² of wooden boards while a palette uses only 1,2 m².

You also know that the manufacturing of boxes required the use of consummables for 9 000 EUR.

Sundry expenses of the month :

- Expenses of purchase : 14.700 EUR to distribute according to the respective purchase prices of the raw materials ;

- Direct labor costs of manufacturing : 18 300 EUR for boxes,
14 700 EUR for palettes.
- Indirect expenses of manufacturing :
 - Amortizations (depreciations) : 2 050 EUR
 - Various services and goods : 4 000 EUR
 - Salaries : 12 800 EUR
 - Other operating expenses : 1 280 EUR
- Transport on sales : 2 100 EUR
- Packaging of finished products : 4 900 EUR (It takes place in the workshop of production)
- Commercial Promotion: 6 600 EUR

Production expenses are to be imputed to the production costs in proportion to the direct labor cost.

The expenses of sale are to be proportionally distributed according to the turnover of the sold finished products.

Diverse information on stocks:

1. The valuation of stocks has to be made according to the method of the balanced average cost ;
2. One of the data of the inventory of the final stocks is known to you :
at the end of month, there are consummables for 6 800 EUR.

Sales :

The company sold 1 350 boxes for 90 000 EUR and 1 150 palettes for 80 000 EUR

QUESTIONS

- a. Calculate the various costs and the analytical results (profits)
- b. Establish the income statement (profit and loss account)

1.1.2.2. COMPANY DONALD RACKETS

The company DONALD manufacture tennis rackets. The firm buys frames and is only putting ropes and give the final stamp to the racket.

Stocks on 01/10/N :

- Frames : 500 units at 10.93 EUR/unit ;
- Catguts : 200 rolls at 7.59 EUR/unit ;
- Ties (clips) : 800 boxes at 0.89 EUR/unit ;
- Consummables : 1 189.89 EUR ;
- Rackets : 1 000 at 25.48 EUR/unit.

To determine the value of the stock, the company uses the method of the balanced average price.

OPERATIONS IN OCTOBER :

Purchases : (All the invoices were registered (recorded) in general accounting)

- Frames : 1 500 units at 11.16 EUR/unit and 1.000 units at 11.38 EUR/unit
- Catguts : 3 000 rolls at 7.81 EUR/unit ;
- Ties (clips) : 2 000 boxes at 0.94 EUR/unit ;
- Consummables : 594.94 EUR.

Exits(Releases) of stock for the manufacturing :

- Frames : 2 520 units ; (one frame corresponds to a produced racket)
- Catguts : 2 530 rolls ;
- Ties (clips) : 2 400 boxes ;
- Consummables : 1 115 EUR.

Labor cost of manufacturing (production) :

9 567 EUR

Purchase expenses : - Rent : 500 EUR
- Amortizations : 100 EUR

Expenses concerning the manufacturing :

- Rent : 1 934 EUR
- Tax on driving strength : 238 EUR
- Repairs : 126 EUR
- Amortizations : 334 EUR
- Insurances : 223 EUR
- Diverse Taxes : 133 EUR

Expenses of administration : (to distribute by $\frac{1}{4}$ in the purchase, by $\frac{2}{4}$ in the production and by $\frac{1}{4}$ in the distribution)

- Salaries : 3 426 EUR;
- Electricity (lighting) : 22.31 EUR;
- Office items : 44.56 EUR;
- Repairs of office machines : 11.16 EUR;
- Diverse taxes : 7.44 EUR;
- Rent : 877.54 EUR;
- Maintenance of premises : 66.93 EUR;
- Telephone : 122.71 EUR;
- Amortizations of office equipment : 89.24 EUR;
- Insurances : 22.31 EUR.

- Monthly advertising (publicity) :

447 EUR

Sale of the month :

2.700 rackets at 35.85 EUR.

QUESTION

Calculate stocks on 31/05, the production cost, the cost price and the result (profit).

N.B.: All your calculations must be rounded in cents.

1.1.2.3. COMPANY DUBUS

A transport company runs two bus lines (routes).

On December 31st N, the income statement (profit and loss account) is as follows :

INCOME STATEMENT

Purchases Consummables (fuels, oil)	12 000	Turnover (Sales)	95 000
Diverse management cost	6 400		
Maintenance and repairs	7 800		
Staff (wages, salaries)	45 000		
Amortizations (Depreciations)	6 500		
Diverse taxes	2 000		
Financial expenses (Interest)	1 900		
Result (Profit)	13 400		
TOTAL	95 000	TOTAL	95 000

The distribution (allocation) of expenses and incomes between both lines in operation gives the following results :

- Revenues : line A = 23 000 EUR ; line B = 72 000 EUR
- Consumption of consummables : line A = 7 500 EUR
line B = 4 500 EUR
- Interest charges : line A = 1 000 EUR ; line B = 900 EUR
- Expenses of staff : line A = 13 000 EUR ; line B = balance
- Diverse management costs : line A = 2 800 EUR ; line B = 3 600 EUR
- Amortizations : line A = 1 500 EUR ; line B = 5 000 EUR

The costs of maintenances and repairs (from an external company) are to be distributed at the rate of 2/3 for line A and of 1/3 for line B. The diverse taxes (taxes of traffic, real estate taxes) are to be distributed in an equal way between both lines.

QUESTIONS :

- a. Establish the allocation table of expenses of both lines.
- b. Calculate the result (profit) realized on the exploitation (operation) of each line.

1.1.2.4. COMPANY INOUT PETROL

The INOUT PETROL company fill a liquid M derived of some oil in empty barrels and empty tins (cans) which she buys abroad.

The results are as follow :

- barrels of 50 liters, for industrial use, sold at 39.66 EUR, VAT not included
 - 5 liters tins, for domestic use, sold at 5.95 EUR, VAT not included.
- A part of the filled tins are sold abroad.

Initial Stoks :

- Liquid M : 200.000 liters at 0.27 EUR;
- Empty barrels : 8 000 barrels at 4.42 EUR;
- Empty tins: 7 000 tins at 1.26 EUR;
- Filled (packaged) barrels : 2 500 barrels at 21.94 EUR;
- Filled tins : 4 500 tins at 5.76 EUR.

Purchases of period :

- Liquid M : 400.000 liters at 0.14 EUR / LITER;
600.000 liters at 0.09 EUR / LITER;
- Empty tins : 21.000 tins at 0.97 EUR;
- Empty barrels : 16.000 barrels at 3.45 EUR.

Direct costs :

- The labor cost amounts to 21.57 EUR for one hour ;
To produce a filled tin, 2 minutes of direct labor cost are required and to fill a barrel 3 minutes ;
- Customs (duties) due to the import of the liquid M : 0.015 EUR/liter ;
- Costs of maritime transport of the liquid M : 5 000 EUR ;
- Insurances transport of the liquid M : 2 500 EUR ;
- Freight costs of the filled tins intended for the export : 2 000 EUR ;
- Commissions to be paid to the foreign intermediary: 1 % of the sale price.

Production of period :

19 500 tins were filled ;
16 000 barrels were filled.

Indirect expenses : (insurances, amortizations, interest charges, taxes)

- Supply of raw materials : 67 491.49 EUR to distribute according to the value of purchases ;
- Workshop of packaging : 104 383 EUR to distribute according to the hours of use of the machine. The machine needs 1 minute to fill a tin and 1,5 minutes for a barrel ;
- Distribution : 83 072.29 EUR to distribute in proportion to the turnover ;
- Administration: 65 000 EUR undistributed (in deduction of the global result (profit)).

Sales of period :

- 20 900 tins (10 000 tins for the export and the balance for the national market)
- 15 400 barrels exclusively for the national market

Valuation of stocks :

BAP rounded in cents.

QUESTIONS :

1. Calculate the analytical results (profits) of barrels and tins sold on the local market and to the export.
2. Establish the income statement (profit and loss account) in general accounting.

1.2. Budget management (Forecast accounting)

1.21. Analysis of the variability of the expenses (costs) according to the activity

The analysis of the effective cost price of a manufacturing is often difficult to implement (operate), even by using the skills of the business accounting.

The budget management is a method which tends to simplify these calculations by separating the study of the costs in two parts : fixed costs and variable costs. The amount of a cost can effectively depends on the level of activity (volume) or, on the contrary, be independent from it.

Example : Let us imagine a workshop in which the unit of work or measure of the activity is the produced quantity. The study of the expenses of our workshop gives the following results (profits) for different levels of activity. The normal activity is 8.000 produced units. We could also choose as unit of work : hour/machine, hour/DLC.

1st table : The GLOBAL COSTS (in thousand €)

LEVEL OF ACTIVITY	SUB- ACTIVITY	NORMAL ACTIVITY	OVER- ACTIVITY	
Produced quantity	6.000	8.000	10.000	12.000
Production cost : - raw materials - direct labor cost - amortizations, rents, - insurances, taxes, interests				
GLOBAL COST				
UNIT COST				

2nd table : The UNIT COST

Level of activity	6.000	8.000	10.000	12.000
GLOBAL COST				
variable				
fixed				
UNIT COST				
variable				
fixed				

What conclusions can we make from these tables ?

Table of the global costs :

- The production cost per unit decreases when we manufacture from 6.000 up to 10.000 produced units then increases past this level of activity;
- Certain expenses vary with the activity, the others remain fixed until 10.000 produced units.

Table of the unit cost :

- The part of the cost resulting from variable expenses remains fixed ;
- Other part resulting from fixed costs decreases : we divide a total of fixed costs by an increasing number of units of work.

The expenses (charges) can be thus classified according to the following matrix in direct or indirect costs and in variable or fixed expenses (charges).

GENERAL CONCLUSION

	VARIABLE COST	FIXED COST
GLOBAL		
UNIT		

Difference between direct, indirect, variable and fixed costs

You should not confuse variable expenses (charges) and direct costs, nor fixed costs and indirect expenses (charges). Although almost similar, these notions do not cover the same expenses !

If a single product : direct variable and fixed expenses

If several products :

	Variable costs	Fixed costs
Direct costs		
Indirect costs		

Examples :

TYPES OF COSTS	VARIABLE		FIXED	
	DIRECT	INDIRECT	DIRECT	INDIRECT
Raw materials	X	-	-	-
Consummables	X	X	-	X
Subcontracting	X	-	-	-
Rent, maintenance, repairs building	-	X	-	X
Administration expenses + computing	-	-	-	X
Insurances	X	-	-	X
Fees, royalties	X	-	-	X
Journeys, receptions	X	-	-	X
Temporary employees	X	-	-	X
Transport	X	X	-	X
Advertising	-	-	X	X
Wages	X	X	-	X
Salaries	X	X	X	X
Amortizations	-	-	-	X
Reduction on stocks	-	-	-	X
Reduction on claims (debts)	-	-	-	X
Reserves/risks and charges	X	-	-	X
Taxes	X	-	-	X
Other operating expenses	-	-	-	X

1.2.2. VARIABLE COSTS

The variable costs or expenses of activity are the expenses which vary proportionally in the activity in a global way. These expenses, when they are calculated for one unit, become fixed (constant).

The main variable costs are the following ones: the cost of raw materials and consummables, direct productive wages (direct labor costs) including also the welfare costs, the expenses of equipment, the consumptions of driving strength,

The knowledge of these variable expenses for a given activity allows the account manager to establish budgets for other levels of activity: they are the **flexible budgets**.

1.2.3. FIXED COSTS OR COSTS OF STRUCTURE

Fixed costs are expenses which are independent from the activity. Their amount remains normally stable whatever the level of activity is.

In our example, they remain globally constant until 10.000 units of workforce, beyond, they progress by level. They are nevertheless variable by produced unit.

The main fixed costs are the amortizations (depreciations), the salaries, the rents, the insurances, the land (property) taxes,....

We can say that the expenses of structure (building, workshop) :

- are practically fixed as long as the activity remains normal ;
- increase by level when we have to modify the structure.

1.2.4. SEMI-VARIABLE COSTS

Numerous expenses do not obey strictly the conditions of the fixed or variable costs. They include a part of fixed costs and a part of variable costs which it is necessary to calculate.

The main semi-variable expenses are the maintenance costs, some production supplies (outside), remunerations for the sales representatives, etc....

Let us consider the following example : a workshop worked 4 000 hours during a month; the maintenance costs of this workshop amounted to 94 860 € ; the following month, the workshop worked 3 200 hours and had 80 172 € expenses.

How to determine the part of fixed and variables costs of maintenance that has to be allocated to this workshop ?

For an activity of 4 000 hours, expenses are 94 860 EUR

For an activity of 3 200 hours, expenses are 80 172 EUR

Thus, for a difference of 800 hours, there is a difference of 14 688 EUR which are only the variable expenses. The variable expenses of one hour are therefore : $14\,688 / 800 = 18,36$ EUR/hour.

According to the equation : $y = a x + b$

Total of expenses = variable costs + fixed costs

Total of expenses = $(4\,000 \times 18,36) + b$

Fixed costs = $b = 94\,860 - 73\,440 = 21\,420$ EUR

1.2.5. THE BREAKEVEN POINT

1.2.5.1. Definition et example

In this application of the variability of expenses (charges), we consider that for a given structure, fixed costs are born all together (totally) by the exploitation (operation) whatever is the level of activity.

Therefore, it will be necessary that sales reach a certain amount so that the considered fixed costs are covered : this is what leads us to the notion of breakeven point.

The breakeven point of a company is the **turnover** needed to cover the **totality** of its expenses without profit nor loss. We also speak about the “critical turnover”. Accordingly, we can say also that at the beginning of profitability, the margin on variable cost is equal to the fixed costs. The formula to determine the breakeven point is the following one:

$$B.P. = \frac{T. \times F.C.}{V.C.M.}$$

Example : Let us consider a company of which the turnover = 800.000 EUR,
V.C. = 450.000 and F.C. = 210.000 EUR

Table of operation (exploitation) :

	INITIAL SITUATION		BREAKEVEN POINT (Turnover BP)	
Turnover				
Variable costs				
Variable costs margin				
Fixed costs				
Profit before tax				

BREAKEVEN POINT (Turnover) =

1.2.5.2. Extra notions

The SECURITY MARGIN is the obtained difference between the turnover and the breakeven point :

$$SM = T - BP$$

The SECURITY INDEX is the security (safety) margin expressed with regard to the turnover :

$$SI = \frac{SM \times 100}{\text{Turnover}}$$

The RATE OF RETURN (profitability) is :

$$RR = \frac{\text{Result} * 100}{\text{Turnover}}$$

Remarks : The result (profit) is the difference between a sale price and a full cost

The margin is the difference between a sale price and a partial cost

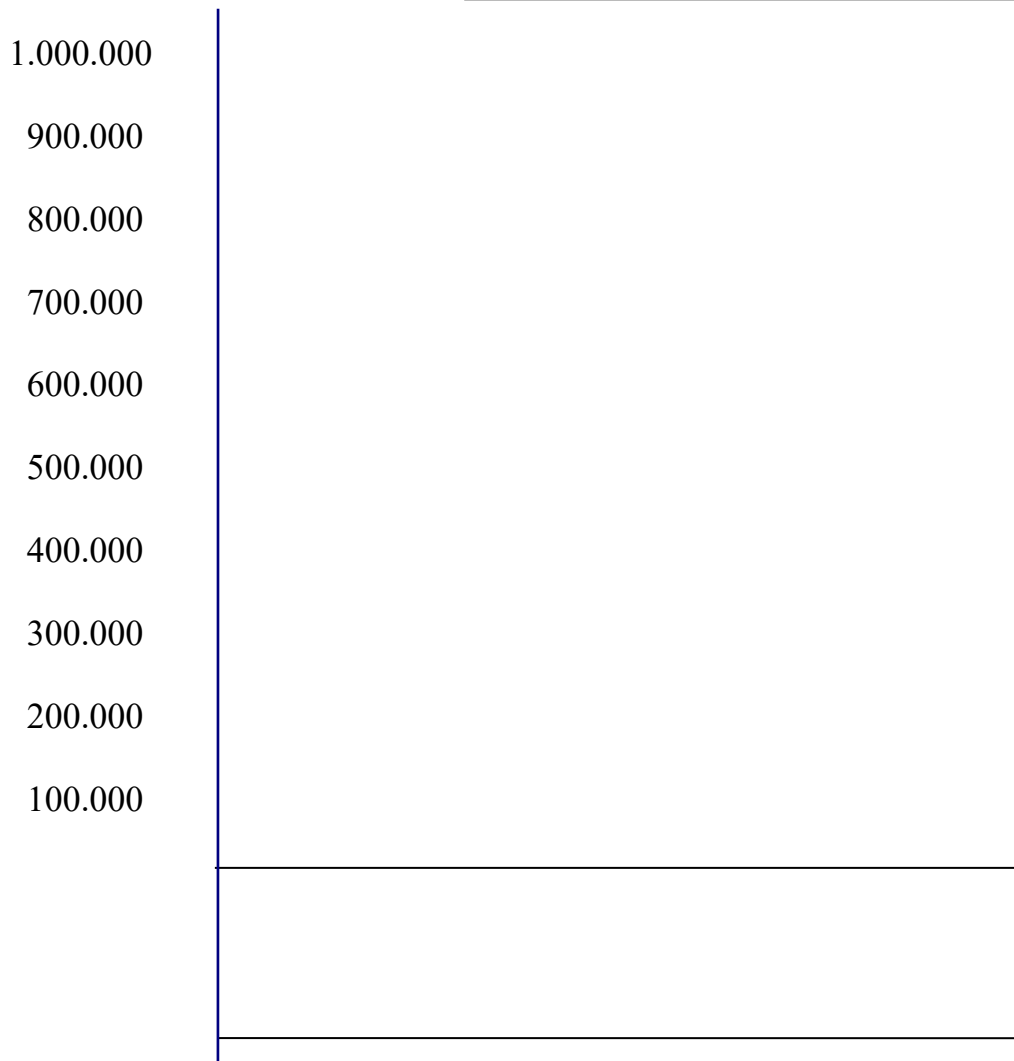
A margin must ALWAYS be specified according to the cost from which it is calculated. We analyze here the margin on variable cost.

1.2.5.3. THE BREAKEVEN POINT (TURNOVER OR DATE)

1.2.5.3.1. REGULAR ACTIVITIES

If we consider that the average turnover is constant during the year, the accumulated turnover develops gradually during the year. In this perspectives (optics), we can determine the date on which we shall reach the breakeven point :

$$\text{B.P. (Date)} = \frac{360 \times \text{B.P. (Turnover)}}{\text{Turnover}}$$



It is also possible to show this date on a graph.

1.2.5.3.2. IRREGULAR ACTIVITIES

The activities of a company are mostly (often) not regular. It is in particular the case of companies with seasonal activities. In that case, we shall have to calculate a monthly table of accumulated sales.

Example :

Period	Monthly sales	Accumulated sales
January	150.000	150.000
February	150.000	300.000
March	100.000	400.000
April	160.000	560.000
May	142.000	702.000
June	268.000	970.000
July	200.000	1.170.000
August	250.000	1.420.000
September		
October		

If the breakeven point is 1.000.000 EUR, it is reached on...

If the breakeven point is 1.220.000 EUR, it is reached on...

1.2.6. EXEMPLE D'ANALYSE DE VARIABILITE

		LIBELLE
1		CHIFFRE D'AFFAIRES HORS TAXE
2		- Encours début période
3		+ Encours fin période
4		PRODUCTION NETTE (C.A. NET)
5		- Sous-traitants
6	4 - 5	PRODUCTION PROPRE (C.A. PROPRE)
7		ACHATS
8		+ Stock début période
9		- Stock fin période
10	7 + 8 - 9	ACHATS CONSOMMES
11	6 - 10	MARGE BRUTE
12	FRAIS	Salaires
13	VARIABLE	Charges sur salaires
14		Carburant
15		Fourn. div. - petit entre. - prod. entr.
16		Location matériel
17		Entretien et réparation
18		Contrôle technique
19		TVA non déductible
20		Plans
21	12 à 20	TOTAL FRAIS VARIABLES
22	11 - 21	MARGE S/FRAIS VARIABLES
23	FRAIS	Appointements
24	FIXES	Charges sur appointements
25		Mazout – eau – électricité - gaz
26		Pneus
27		Loyer et charges locatives
28		Fournitures de bureau
29		Honoraires
30		Téléphone, timbres postaux
31		Réception - frais de déplacement
32		Assurances
33		Impôts et taxes
34		Frais sur banque
35		Frais sur emprunt
36		Amortissements
37		Taxes véhicules
38		Cotisation indépendant
39	23 à 38	TOTAL FRAIS FIXES
40	21 + 39	TOTAL FRAIS
41	11 - 40	RESULTATS
42		Nombre d'heures payées
43		Taux de productivité
44	42 x 43	Heures productives
45	10 : 44	COUT HORAIRE COMPLET

1.2.7. EXERCISES

1. The turnover of a brewery is 500.000 € / year, the variable costs are 350.000 € and the fixed costs are 120.000 €.

Calculate the breakeven point (turnover and date)

2. Same exercise nr 1, but we give us as added information the monthly distribution of sales :

January	: 10.000	May	: 90.000	September	: 45.000
February	: 12.000	June	: 99.000	October	: 29.000
March	: 15.000	July	: 85.000	November	: 12.000
April	: 20.000	August	: 75.000	December	: 8.000

Let us calculate the date when the company reaches the breakeven point.

3. The turnover of a transport company is 10.000.000 EUR.

The analysis of expenses is as follows :

Variable costs : 6.250.000 EUR

Fixed costs : 2.600.000 EUR

Calculate the breakeven point, the security margin, the security index as well as the rate of return (profitability).

4. What is the turnover to be realized to obtain a profit (result) of 800.000 EUR, if fixed costs amount to 148.000 EUR and if the variable cost are 75 % of the turnover ?
5. The fixed costs of a company are 120.000 EUR.
Within the framework of her current situation, she knows how to sell only 10.000 articles at 25 EUR/unit on the national market. The variable costs are 11 EUR by article. Calculate the result (profit).

If the company considers her opportunities of export, it could increase its sales from 10.000 articles of its finished products up to 20.000 articles, on the following conditions :

- Supplementary expenses : 50.000 EUR of fixed costs. (more advertising, amortizations of a new assembly plant and new machines, insurances,...)
- Lower the sale price to 24 EUR and add new variable expenses of 2 EUR/article (by improving the quality,...)

Calculate the results (profits) according to the sale of 12.000, 15.000 and 20.000 articles.

6. Data : Fixed costs : 2.000.000 EUR/an.

Annual variable costs : 6.000.000 EUR for 10.000 sold units.

Sale price : 1.000 EUR /unit.

a) Determine the breakeven point in quantity.

b) A Brazilian sales agent proposes you a supplementary market; as intermediary, he asks a 10 % commission with regard to the sale price of the supplementary units.

Thanks to him, it is possible to sell 20.000 supplementary units at 900 EUR/unit. To be able to answer this proposition, it is necessary to invest in a new industrial building, of new machines,... This investment will entail a complement to fixed costs of 5.000.000 EUR/year.

Furthermore, this investment will allow to reduce the initial variable costs by 60 EUR per unit (only valid for the 20.000 supplementary units).

Would you accept this proposition? Justify your answer.

7. You foresee for this year :

Quantity to be sold: 50.000 units at 500 EUR/unit

VC of production : 300 EUR per unit

VC of distribution : 20 % of the sale price

Fixed Costs : 3.000.000 EUR/year; but with an average occupation rate of 5/6 (machines allow to produce 60.000 units a year at the most).

Here are the new opportunities of sales for the next year :

A prospect (potential customer) proposes you the following market:

- or 40.000 units at 400 EUR per unit

- or 30.000 units at 420 EUR per unit.

If the annual production exceeds 60.000 units, the company will have to buy one or several new machines. One machine, involving an annual investment of 1.200.000 EUR, is necessary to produce (maximum) 20.000 supplementary units. These new equipments allow to decrease the VC of production by 70 EUR per produced unit (initially planned and supplementary).

What will be your decision towards this prospect ? Justify your choice.

8. Modification of the structure (investment)

An airline company decides to enlarge his dispatching hub.

The creation of new buildings involves the modification of fixed costs so that the breakeven point is not valid any more : it is necessary to calculate a new critical turnover.

The current conditions of operation of the airline company, specialized in the dispatching of parcels, are the following ones :

- rate of the variable costs margin : 25 % of the turnover;
- fixed costs : 100.000 EUR;
- planned (foreseen) turnover : 1.000.000 EUR.

A new investment is planned by the 1st of July which will increase the fixed costs up to 160.000 EUR. The margin on variable costs remains unchanged.

Calculate the breakeven point before and after the investment ?

9. Modification of the rate of the margin on variable costs

Further to diverse possible changes (sale price, cost price, labor costs, energy), the rate of the margin on variable costs can also be modified.

The Company of fertilizers (from Liège) makes, among others, the product PXT19 with a contract of long-term delivery at a fixed price, which we cannot modify. The margin on variable cost by produced unit is 15 EUR. The fixed costs are 120.000 EUR / each year. The monthly production is 1.000 units. When will the company reach the breakeven point (quantity) ?

On the 1st of May occurs an increase of the cost of purchase of raw materials, an increase of the wages (direct labor costs) and the energy which reduces the margin to 7,5 EUR. Which is the repercussion of this variation on the breakeven point expressed in quantities ?

We plan the same produced quantity each month.

10. Commercial company - export

A commercial company sells a single type of goods abroad. The budgetary information for the accounting year 2009 is as follows :

17	Debts LT	12.540.125,25 EUR
2	Investments	13.125.455,50 EUR
42	Debts ST	3.512.458,12 EUR
60	Purchase price of the goods	18.450.489,89 EUR
60	Customs	5 % of the purchase price
61	Advertising (publicity)	2.124.546,50 EUR
61	Sales promotion	315,12 EUR per sold unit
61	Insurances commercial Building	1.550.789,00 EUR
61	Transport of goods	2,00 EUR per sold unit
62	Salaries (administration staff)	2.001.045,23 EUR
62	Representative : Fixed	650.089,10 EUR
	Variable	2,5 % of the turnover
63	Amortizations	10 % Straight line depreciation
65	Interests on debts	7,5 % Bank loan LT and ST
70	Turnover	12.000 Units at 2.480,50 EUR /unit
74	Grants in the export (subsidies)	250 EUR per sold unit

Questions :

- Establish the board giving the sharing of the expenses in VC and FC as well as the margin on variable costs and the projected result (profit);
- Calculate the Breakeven point with and without subsidies (grants);
- Which would be the impact on the result (profit) if there is an increase of the sale price by 5 % per unit (the other data remaining unchanged) ;
- Calculate the influence on the result (profit) if there will be new investments of 3.000.000 EUR financed by stockholders (the other data remaining unchanged).