# RELEVANT AND IRRELEVANT COST/REVENUES FOR DECISION MAKING

**Lecture Outline:**

* Introduction
* Relevant costing and decision making
* Make or buy decisions
* Special orders
* Shut down decisions
* Pricing decisions
* Limiting factor situations

**Introduction**:

In the previous lecture you were introduced to decision making using cvp analysis. In this lecture we are going to look at decision making in detail by highlighting the information required and techniques that assist in the decision making situations.

**Lecture Objectives**:

By the end of this lecture, you should be able to;

* Identify the information relevant for decision making in a given scenario
* State the characteristics of a relevant cost/revenue.
* Advise on the best course of action to take through calculations

**Information for decision making**

Information about decision-making is both financial and non-financial. Costs contribute to financial information in making decisions.

# Qualities of good information

* It should be relevant to the users’ needs.
* It should be accurate with the users’ needs.
* It should inspire the users confidence
* Good information should be timely.
* It should be appropriately communicated.
* It should be cost effective.
* It should be clear to the user.

The Role of modern F/M is to maximize wealth of the firm for shareholders.. The overriding requirements of information for decision making is relevance..

# Relevant costs for decision making

Costs, which should be used for decision-making, are called relevant costs.

A relevant cost is a future cash flow arising as a direct consequence of a decision.

Therefore relevant costs are:

* Future costs i.e. decision about the future.
* Relevant cost are cash flows

Costs that do not reflect additional cash spending should be ignored. E.g. Depreciation, notional rent/interest. All overheads absorbed.

-Relevant costs are incremental costs i.e. arises as a direct consequence of a decision. **Therefore relevant costs are future, incremental, cash flows**

**Examples of relevant costs:**

* Controllable costs
* Incremental costs
* Avoidable costs - Not incurred if activity to which they relate did not occur.
* Opportunity costs – benefit which could have been carried but has been given up by choosing one option instead of another.
* Differential costs: profit foregone if the next best future costs or alternative is not chosen.

**Non relevant or irrelevant costs:**

These are costs that are incurred regardless of the decision taken i.e they are irrelevant for decision making.

**EXAMPLES**

1. Fixed costs
2. Sunk costs: Cost that have already been incurred e.g. depreciation.
3. Committed cost future cash outflow that will have to be incurred whatever decision is taken.
4. Notional/imputed cost – a hypothetical cost to reflect the use of a benefit for which no actual cash expense is incurred. E.g. notional rent, notional interest.
5. Not all fixed costs are irrelevant all the time and neither are V.C relevant all the time. I.e. if a VC doesn’t vary across alternatives then it's not variable and if fixed costs can be eliminated they can become VC.

# SPECIAL STUDIES

The concept of relevant costs/revenues is a applied in special study decisions below.

* 1. Deleting a segment.
	2. Special selling price decision
	3. Decision making at the influence of limiting factors.
	4. Make or buy decisions.
	5. Replacement of equipment.

# DELETING A SEGMENT/(Shut down decision)

* A segment may include a product, type of customer, geographical region, distribution channel etc.
* If a company is experiencing escalation in costs it may have to make a strategic decision of abandonment or reduction.
* If profitability is declining some products/distribution points could be dropped.
* Such decisions require consideration of only relevant revenues and relevant costs.
* Company carries out segmented profitability analysis to compare profitability of various segments.
* If a segment has negative contribution (S-V) it should be deleted/dropped. If S-V is +ve then it should not deleted although after apportioning fixed costs may be making losses.

# EXAMPLE

A Company markets its products through 3 geographical regions, south, central and north. The estimates of costs and revenues for each sales territory for the next accounting period are as follows:-

|  |  |  |  |
| --- | --- | --- | --- |
|  | **South** | **Central** | **North** |
|  | **000** | **000** | **000** |
| Sales | 900,000 | 1,000,000 | 900,000 |
| Cos | (400,000) | (450,000) | (500,000) |
| Gross profit | 500,000 | 550,000 | 400,000 |
| Fixed selling costs |  |  |  |
| Sales man salaries | (80,000) | (100,000) | (120,000) |
| Sales office mgt exp | (40,000) | (60,000) | (80,000) |
| Advert | (50,000) | (50,000) | (50,000) |
| Sales man expenses | (50,000) | (60,000) | (80,000) |
| HQ costs |  |  |  |
| Admin | (80,000) | (90,000) | (90,000) |
| Warehouse costs | (32,000) | (36,000) | (36,000) |
| **Net profit/(loss)** | **168,000** | **154,000** | **156,000** |

The products are packaged and dispatched from a central warehouse and it is estimated that 50% of the warehouse costs are variable and the remainder fixed. All selling costs are fixed with the exception of salesmen expenses, which vary with sales revenue. All administration expenses of Headquarters are common and unavoidable to all territories. And have been apportioned to all regions on the basis of sales value.

In view of the loss expected in the north what would be your advice on whether it should be closed or not.

# SOLUTION

 Shs

Revenue 900,000

COS 500,000

Fixed selling costs 330,000

Warehouse 50% x 33600 18,000 848,000

#### Excess of revenue over cost

#### (Contribution) 52,000

North is making a positive contribution towards the net profit of 52,000 and therefore it should not be closed.

**Segmental Profitability Analysis**

Using the marginal costing approach/variable costs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | SOUTH | CENTRAL | NORTH | TOTAL |
|  | Shs 000 | Shs 000 | Shs 000 | Shs 000 |
| Sales | 900,000 | 1,000,000 | 900,000 | 2,800,000 |
| Variable costs |  |  |  |  |
| Cost of sales | (400,000) | (450,000) | (500,000) | (1,350,000) |
| Salesmen exp | (50,000) | (60,000) | (80,000) | (190,000) |
| 50% warehousing | (16,000) | (18,000) | (18,000) | (52,000) |
| Gross contribution towards all fixed costs | 434,000 | 472,000 | 302,000 | 1,208,000 |
| Specific fixed costs |  |  |  |  |
| Salesmen salaries | (80,000) | (100,000) | (120,000) | (300,000) |
| Sales and mgt office | (40,000) | (60,000) | (80,000) | (180,000) |
| Advertisement | (50,000) | (50,000) | (50,000) | (150,000) |
| Contribution to common FC | 264,000 | 262,000 | 52,000 | 578,000 |
|  |  |  |  |  |
| Common fixed costs |  |  |  | 260,000 |
| 50% ware housing costs |  |  |  | 52,000 |
| Net profit |  |  |  | 266,000 |

If we close North 52,000/= will be forfeited from 266,000,000 = 214,000,000.

Segmental profitability analysis shows that if we drop North the net profit would reduce by 52,000,000.

# EXAMPLE

A company produces 3 products A, B, & C. The following estimated data has been obtained for the next accounting year.

|  |  |  |  |
| --- | --- | --- | --- |
|  | A | B | C |
|  | Shs | Shs | Shs |
| Sales | 20,000,000 | 30,000,000 | 10,000,000 |
| COS | (10,000,000) | (25,000,000) | (2,000,000) |
| GP | 10,000,000 | 5,000,000 | 8,000,000 |
| Selling Adm | (6,000,000) | (4,000,000) | (8,500,000) |
| Net profit/loss | 4,000,000 | 1,000,000 | (5,000,000) |

COS is variable, 80% of selling and administrative overheads are fixed and have been apportioned to products. The company is facing escalation in costs and declining group profitability due to supporting 3 products. The company would like to drop product C because of the expected loss. What would be your advice?

###### SOLUTION

**Profitability Analysis**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | A | B | C | Total |
|  | Shs 000 | Shs 000 | Shs 000 |  |
| Sales | 20,000 | 30,000 | 10,000 | 60,000 |
| *Variable costs* |  |  |  |  |
| COS | (10,000) | (25,000) | (2000) | (37,000) |
| 20% S & A ohds | (1200) | (800) | (1700) | (3,700) |
| Contribution | 8,800 | 4,200 | 6,300 | 19,300 |
| Fixed costs |  |  |  |  |
| 80% S & A ohds | - | - | - | 14,800 |
| Net profit |  |  |  | 4,500 |

Approach:

Relevant sales 10,000,000

COS 2,000,000

Variable costs 20%x8,500,000 1,700,00 3,700,000

6,300,000

Product C makes a contribution of 6,300,000/= towards the overall profit if they drop C they will make a net loss i.e 4,500 - 6,300= (1,800/=).

***NOTE: If you are asked to advise the managers of a company, don’t just state any advice without illustrations. You have to support your advice with calculations***

**SPECIAL SELLING PRICE DECISIONS/Special order decisions**

A special price is one set under unique circumstances and is usually below the normal price.

* It is often below the total cost of production.
* Occurs if a company would like to get rid of inventories or increased capacity.

**EXAMPLE**

Mukwano Ltd has the following cost profile.

 Shs

D. Material per unit 300

D. labour per unit 300

Variable ohds per unit 50

Fixed ohd per unit 50

Total production cost 700

Mark-up (10%) 70

**Factory price 770**

The company produces 100,000 tons of soap to satisfy the market. So far orders have been received for only 90,000 tons. However, a customer has made a special order of 10,000 tones at a price of 650/= per unit. Should the company accept the special order?

**SOLUTION**

Consider only relevant costs

Direct material 300

Direct labour 300

Variable ohds 50

Total relevant costs 650

Comment: The company should accept the price of 650 which is below the factory price of 770.

**EXAMPLE**

A company produces a single product and has budget for the production of 100,000 units during the next quarter. The cost estimates for the quarter are as follows;

 Shs (000)

D. labour 600,000

D. material 200,000

V. ohds 200,000

Fixed costs 400,000

 1,400,000

The company has received orders for 80,000 units during the coming period at a generally accepted price of 18000 per unit. It appears unlikely that orders will be received for the remaining 20,000 units at a selling price of 18,000/= per unit, but the customer is prepared to purchase them at a selling price of 12,000 per unit. Should the company accept the offer?

**SOLUTION**

Consider relevant revenue (additional revenue) if you sell 20,000 units. Is it more than relevant cost?

|  |  |  |
| --- | --- | --- |
|  | Shs 000 | Shs 000 |
| Relevant revenue 20,000x12 |  | 240,000 |
| Less relevant costs |  |  |
| D. Material 20,000x2000 | 40,000 |  |
| V. ohd 20,000x2000 | 40,000 | 80,000 |
| Excess of relevant revenue over relevant costs (contribution to fixed costs) |  | 160,000 |

Since 160,000 is positive the order should be accepted.

Show P$L A/C: Decision relevant approach: Variable costing

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Accepted100,000 units  |  |  |  | Order not accepted80,000 units |
|  | 000 |  |  |  | 000 |
| Sales | 1,680,000 |  |  |  | 1,440,000 |
| *Less variable costs:* |  |  |  |  |  |
| Direct material | 200,000 |  | 160,000 |  |  |
| V. ohds | 200,000 | 400,000 | 160,000 |  | 320,000 |
| Contribution |  | 1,280,000 |  |  | 1,120,000 |
| Less fixed costs |  |  |  |  |  |
| D. labour |  | 600,000 |  |  | 600,000 |
| Fixed ohds |  | 400,000 |  |  | 400,000 |
| Net profit |  | 280,000 |  |  | 120,000 |
|  |  |  |  |  |  |

Since 280,000/= > 120,000 accept the order.

**Decision making at the expense of limiting factors**

* Sales demand may be in excess of production.
* Happens when there are limiting factors/contributions.
* A limiting factor is a scarce resource, which constrains output of production. E.g labour hrs, machine hours, factory space etc.
* Where limiting factors apply the decision-maker should optimize the allocation of the limiting factor by producing the most profitable item.

Profitability = Contribution/unit

 Limiting factor

**EXAMPLE**

A company produces 3 products X, Y and Z. The following information has been obtained for the next accounting period.

|  |  |  |  |
| --- | --- | --- | --- |
|  | X | Y | Z |
| Contribution/unit | 12,000 | 10,000 | 6,000 |
| No of machine hrs/unit | 6 | 2 | 1 |
| Estimated sales demand | 200 | 200 | 200 |

Machine hr capacity is limited to 1200 hrs for the period and is insufficient to meet total sales demand. You have been asked to advise as to which product should be produced during the period.

**SOLUTION**

Limiting factor = Machine hours

Identify the most profitable product

 X Y Z

### Cont/unit

Limiting factor 12000 10,000 6,000

 6 2 1

 Shs 2000 hr-1 Shs 5000 h-1 Shs 6000 h-1

Ranking 3rd 2 nd 1 st

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Product | No of units to be produced | No of hrs required to be produced | Cumulative hrs | Balance hrs |
| Z | 200 | 200x1=200 | 200 | 1000 |
| Y | 200 | 200x2=400 | 600 | 600 |
| X | 100 | 100x6=600 | 1200 | - |

**MAKE OR BUY DECISIONS**

A Company may have a capacity to manufacture a product internally or to buy it from outside supplier.

* Compare relevant cost of making to that of buying. The decision goes for whichever is lower.
* The "make" option should give management more direct control over the work, but the buy option often has the benefit that the external organisation has a specific skill and expertise in work. So the decision should not be based exclusively on cost considerations.

**EXAMPLE:**

A company is considering alternatives of either purchasing a component of an outside supplier or producing the component itself. The estimated costs of the company producing the component are as follows

 Shs

#### D labour 100,000

D. material 300,000

V. ohds 50,000

F. ohds 200,000

 680,000

Making the components will require directing 20 scarce. machine hrs which are currently being used to produce product A that yields a contribution of 10,000/= per hr. The direct labour will remain in the pay roll irrespective of the decision. The outside supplier has quoted a figure of 500,000 for supplying the component.

**REQUIRED**:

Advise whether to make or buy the components.

**SOLUTION**

Manufacturing cost: Shs

D. materials 300,000

V. ohds 50,000

#### Opportunity cost

20 machine hrs x 10,000 200,000

Total relevant cost 550,000

Since the cost of manufacture 550,000/= is higher than the suppliers price 500,000 the decision should be to buy from supplier.

**Approaches to pricing**:

***a) Full cost plus pricing***

This is a traditional approach to pricing whereby the sales price is determined by calculating the full cost of the product and adding a percentage mark up for profit.

***b) Marginal cost plus pricing***

Here a profit margin is added to marginal cost. This is sometimes called markup pricing.

***c) Minimum pricing***

A minimum price is the price that would have to be charged so that the following costs are just covered.

* The incremental costs of producing and selling the item
* The opportunity costs of the resources consumed in making and selling the item

**Significance of qualitative factors**

* These are factors that might influence eventual decisions but which are not quantified in terms of relevant costs or incomes.
* Stem from non-financial objectives.

**Examples**

1. Availability of cash - to purchase equipment.
2. Inflation - if income from an opportunity is fixed but costs likely to increase with inflation the contract profitability will be overstated unless inflation is taken into account.
3. Employees - involvement of employees in decision e.g. shut down.
4. Customers - New production decisions - quality and after sales service affects customer loyalty.
5. Competitions - Decisions stimulate response from rival companies.
6. Timing factors - choice on when to take up the opportunity.
7. Suppliers - Decision to close a production line temporarily may affect long-term goodwill.
8. Feasibility: Reservations on carrying out a proposal.
9. Flexibility and internal control.
10. Political pressures.
11. Legal constraints.

**Review Questions**:

1. What are the assumptions on which relevant costing is based.

2. What matters other than cost should be considered in a make or buy situation?

3. Describe three types of decision problem that could arise if an organisation carries out process operations in which two or more joint products are made from a common process.

4. Distinguish between avoidable and a sunk cost.

5. A company produces three products and is reviewing the production and sales budgets for the next accounting period.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Oranges | Passion fruits | Apples |
| Unit selling price | 200 | 150 | 800 |
| Variable cost per unit | 140 | 70 | 600 |
| Fertilisers per unit (kg) | ¼  | ½  | 2 |
| Estimated sales demand | 500 units | 10,000 units | 600 units |

Amount of fertilizers is limited to 1,700kg for the period and is insufficient to meet total sales demand.

Required:

a) Determine the product mix a company can produce and sell in order to maximize returns during the period.

b) Total contribution to be gained and lost because of the optimum mix selected.