**CHAPTER - 5**

 **Decision making and Relevant Information**

**INTRODUCTION:**

Costs that differ between alternatives are called **relevant costs.** To be relevant, a cost or revenue item must be differential or incremental. An **incremental revenue** is the amount of revenue that differs across decision choices and **incremental cost** (**differential cost**) is the amount of cost that varies across the decision choices. To the extent possible and practical, relevant costing compares the incremental revenues and incremental costs of alternative choices. Although incremental costs can be variable or fixed, a general guideline is that most variable costs are relevant and most fixed costs are not. The logic of this guideline is that as sales or production volume changes, within the relevant range, variable costs change, but fixed costs do not change.

***Identifying Relevant Costs and Benefits***

Relevant costs are those costs that are avoidable by choosing one decision alternative over another, regardless of whether they are variable or fixed.

Only those costs and benefits that differ in total between alternatives are relevant in a decision. For example, if you are trying to decide whether to go to a movie or to rent a video for the evening, the rent on your apartment is irrelevant. Whether you go to a movie or rent a video, the rent on your apartment will be exactly the same and is therefore irrelevant to the decision. On the other hand, the cost of the movie ticket and the cost of renting the video tape would be relevant in the decision because they are ***avoidable costs.***

An **avoidable cost** is a cost that can be eliminated in whole or in part by choosing one alternative over another. By choosing the alternative of going to the movie, the cost of renting the videotape can be avoided. By choosing the alternative of renting the videotape, the cost of the movie ticket can be avoided. Therefore, the cost of the movie ticket and the cost of renting the videotape are both avoidable costs. On the other hand, the rent on the apartments not an avoidable cost of either alternative. You would continue to rent your apartment under either alternative. Avoidable costs are relevant costs whereas *unavoidable costs are irrelevant costs.*

***There are two broad categories of*** irrelevant ***costs in decisions.*** These are

***1. Sunk costs or past costs:*** a cost that has already been incurred and cannot be avoided regardless of what a manager decides to do.

***2. Future costs that do not differ between the alternatives.***

To identify the costs that are avoidable in a particular decision situation and are therefore relevant, these steps should be followed:

**A**. Eliminate costs and benefits that do not differ between alternatives. These irrelevant costs consist of (a) sunk costs and (b) future costs that do not differ between alternatives.

**B.** Use the remaining costs and benefits that do differ between alternatives in making the decision. The costs that remain are the differential, or avoidable, costs. **5.1. The Role of Accounting in Special Decision**

Decision making is the process of selecting the best course of action from two or more alternative course of action. Decision making is one of the basic functions of manager. Managers are consistently faced problem with deciding;

* What product to sell
* What production method to use
* Whether to make or to buy component parts
* What price to charge
* What channels of distribution to use
* Whether to accept or reject special orders at special price

In decision making one of considered key factor is cost. The cost of one alternative must be compared against the cost of other alternatives as one step in the decision making process. The problem is that some costs associated with alternatives may not be relevant for the decision to be made, so to be successful in decision making, manager must be able to tell the difference between relevant and irrelevant data and must be able to correctly use the relevant data in analyzing alternatives, therefore, the rule of accounting distinguishing relevant information from irrelevant information.

Costs incurred in the past for the acquisition of an asset or resources are called **sunk costs.** They cannot be changed, no matter what future course of action is taken because past expenditures are not recoverable, regardless of current circumstances.

**An opportunity cost** is the benefit that is foregone as a result of pursuing some course of action.

Opportunity costs are not actual dollar outlays and are not recorded in the formal accounts of an organization.

**5.2. The Concept of Relevance**

**Relevant costs** are *expected future costs,* and **relevant revenues** are *expected future revenues* that differ among the alternative courses of action being considered.Revenues and costs that are *not relevant* are said to be *irrelevant*. It is important torecognize that to be relevant costs and relevant revenues they *must*:

\_ **Occur in the future**—every decision deals with selecting a course of action based on its expected future results.

\_ **Differ among the alternative courses of action**—costs and revenues that do not differ will not matter and, hence, will have no bearing on the decision being made. Whereas not relevant for decision making is called irrelevant cost (information)

Theinformation (cost) relevant for decision making is said to be (information) Relevant Costs and Relevant Revenues
**5.3. Types of Decisions**

1. **Special order decisions**

Special order is one time order that is not considered as part of the company normal ongoing process. Manager sometimes face the decision of accepting or rejecting one time only special orders. But before making this decision the manager should consider some point like:

* Idle capacity.
* Profitability.
* It should not affect regular business.
* Fixed cost remains constant.
* It should not require additional operating income.
* Irrespective of the method whether the co. follows variable or absorption method.

**Example:** award co. Manufactures Medals for winner of athletics events. The co. has capacity to produce 48,000 medals each month. Current production and sales are 30,000 medals.

**Additional information**

Items birr/Medals
Sales 20
selling and marketing cost 7
manufacturing cost 12

The manufacturing cost per medal of Br 12 consists of

 Variable cost/unit fixed cost /unit total cost /unit

* Direct material $ 6 - $6
* Direct labor 0.5 1.5 2
* MOH 1 3 4
* manufacturing cost $7.5 $4.5 $ 12

Ethiopian football federation offers to buy 900 medals at Br 11 per medal. No subsequent sales to this customer are anticipated.
Required: should award co. accept the offer? Why?

Accept the offer b/c producing the product cost is less than price of offer i.e fixed manufacturing cost and marketing cost (including variable marketing costs) are irrelevant costs. That is because these costs will not change in total whether or not special order is accepted

Relevant cost Price of offer

For producing

 DM---------------6

 DL----------------0.5

 FOH----------------1

Total relevant cost = **birr 7.5** birr **11.00**

Decision accept the offer b/c

Incremental method

Incremental sales (11 x 900) ------------9,900

Less incremental cost (7.5 x 900) --------6750

Incremental gross profit ------------------3,150

Accept the offer b/c it has increase gross profit

-no marketing Cost will not necessary onetime special order

-incremental cost is the additional total cost incurred for n activity

Incremental revenue is additional total revenue from an activity

Therefore, Award Company should accept the special order even though the price of the special order (11) is less than the normal price (20), because the incremental revenue of special order is greater than the incremental cost of special orders.

NB: in general special orders are acceptable as long as the incremental revenue from special orders exceeds the incremental costs from special order.

1. **Make or buy decision**

**In sourcing (make**): it is the process of producing goods and services within the organization rather purchase the some product from outside suppliers.
**Out sourcing (buy): it is** the process of purchasing goods or services from outside supplier. Cost is the major factors in making decision about in sourcing or out sourcing.
Decision about whether a producer of good or service will in source or outsource are also called make or buy decision.
In dealing with make or buy decision, the manager has to consider whether idle facilities exist. If idle facilities exist the manager has the following facilities.

* Make the part using the idle facilities.
* Buy and leave idle facilities.
* Buy and rent idle facilities.
* Buy and use idle facilities for other purpose.

The following information is relevant for this decision making.
 1. Cost that will be incurred under both alternatives are irrelevant to this analysis.

 2. Qualitative factors must be evaluated in this decision process.

**Example:** Dire Dawa food complex manufacture packing cartons for use in its production line. The manufacturing costs per carton for 10,000 cartons are as follows.

* Direct material Br 4
* Direct labor 3
* Variable FOH 2
* Fixed FOH 2.50

Adama packing cartons factory has offered to sell 10,000 cartons to Dire Dawa food complex for Br 10 per carton. If Dire Dawa food complex accept the offer; Br 2.50 fixed FOH would not be eliminated. Assume that the released facilities will be left idle

Required:
a) Should Dire Dawa food complexes accept the offer?
b) Assume that the idle facilities will be used to produce other product that will have operating
 income of Br 14,000, should the company purchase the cartons?
c) Assume that the idle facilities will be rented for Br 8,000, should the company purchase the
 cartons?
 MAKE BUY

 Cost purchase ----- 10/ carton

Cost for produce DM 4

 DL 3
 V. FOH 2
 F. FOH 2.5 2.5
 Total 11.5 12.5

1. Dire Dawa food complex reject the offer b/c

 Buy cost > making cost

Or 11.5 x 10,000 make or (9 x 10,000)

12.5 x 10,000 buy = (10 x 10, 000)

Decision, the company should reject the offer to save Br. 10,000

1. Make Buy

 Cost purchase 100,000

 Cost for produce 90, 0000
 revenue from idle 14,000
 total cost (90,000) (86,000)

Decision; the company should accept the offer to save birr 4,000

1. Make Buy

 Cost purchase 100,000

 Cost for produce 90, 0000
 revenue earned from rent 8,000
 total cost (90,000) (92,000)

Decision: the co. should reject to save Br. 2,000

1. **Add or Drop a services, product, or department**

Decision relating to whether old product line or other department of a company should be drop and new ones added are grouped under the decision making areas which are needed comparison based on relevant information. In such cases both quantitative and qualitative factors are considered. Quantitative factors are outcomes that are measured in numerical terms; they can be expressed in monetary terms. Example, include cost of direct material, direct labor and marketing. Qualitative factors are outcomes that are difficult to measure accurately in numerical terms. Employee’s moral is an example.

Other special manager face is whether to add new service, product and department or drop existing services, product and department. in deciding to add or drop service , product and department the manager has to identify the avoidable cost and unavoidable cost.

**Avoidable cost**: a cost that will no longer be incurred if a service, product and department drop or deleted. Avoidable costs are relevant for decision making.

**Unavoidable cost**: a cost that will continue to be incurred if the product is dropped. Unavoidable cost is irrelevant for the decision making or costs that will continue even if the company discontinues an operation.

**Example:** Solomon PV LTD CO. has three major departments: Pastry, General merchandise and Computer center. management is considering to dropping the computer center which has consistently shown a net loss. The present annual net income is reported in the following tables (in thousands).

**Departments**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Items**  | **Pastry**  | **General merchandise**  | **Computer center**  | **Total**  |
| Sales Variable COGS &Exp. CB. margin Fixed expense  Avoidable  Un avoidable Total Fixed cost Operating income  | Br 400200200 1040 50150 | Br 400028001200 250500750 450 | Br 600390210100210310100 | Br 5000339016103607501110500 |

If the computer center is dropped the managers will use the vacated space for either more pastry or more general merchandise. The expansion of General merchandise would not entail hiring any additional salaried person. But more pastry requires additional salaried person at annual costs of Br 25,000. The manager think that sale of general merchandise would increase by Br 300,000 and pastry by 200,000 if expanded.

Required 1) should the management drop the computer center?
 2) If the vacant facilities left idle, should the management drop the computer center?

Case 1: **dropping computer and expand General merchandise**

|  |  |  |  |
| --- | --- | --- | --- |
| **Items**  | **Pastry**  | **Expand General merchandise** | **Total**  |
| Sales Variable COGS &Exp. CB. margin Fixed expense  Avoidable  Un avoidable Total Fixed cost Operating income  | Br 400200200 1040 50150 | Br 4000 +3002800 +210 1200 + 90 250 + 0500 + 210750 + 210 330 | Br 4,700321014902607501010480 |

**Case 2: dropping computer and expand pastry**

|  |  |  |  |
| --- | --- | --- | --- |
| **Items**  | **General merchandise**  | **Expand pastry**  | **Total**  |
| Sales Variable COGS &Exp. CB. margin Fixed expense  Avoidable  Un avoidable  Cost incurred if expandTotal fixed cost Operating income  | Br 40002800 1200 250500--750450 | Br 400 + 200200 + 100 200 + 10010 + 040 + 21050 + 210 2528515 | Br 460031001500260750 251035465 |

The management should not drop the computer center, the company continue as it is b/c 5,00 operating income is greater than the other two choice. The decision is prefer pastry and general merchandise continue and computer center get loss is the best b/c gross profit is equals 500; the other is less i. e. 465 and 480.

1. **Product mix under capacity constraint**

We now examine how the concept of relevance applies to **product-mix decisions**—the decisions made by a company about which products to sell and in what quantities. These decisions usually have only a short-run focus, because they typically arise in the context of capacity constraints that can be relaxed in the long run.

To determine product mix, a company maximizes operating income, subject to constraints such as capacity and demand. Throughout this section, we assume that as short run changes in product mix occur, the only costs that change are costs that are variable with respect to the number of units produced (and sold). Under this assumption, the analysis of individual product contribution margins provides insight into the product mix that maximizes operating income.

Example:
Assume Sony TV factory produce two type of TV:  **15’’ TV** and **20’’ TV**. The data for each product are:
 1) For 15’’ TV SP/TV is Br 400 and VC/TV is 200
 2) For 20’’ TV SP/TV is Br 600 and VC/TV is 250

Assume that the productive capacity is the limiting factors. Only 8000 Hrs are available for the year. 3 units of 15’’ TV can be produced per hrs and 1 unit of 20’’ TV per hrs

Required:

1. Which product is more profitable?
2. Assume the demand for 15’’ TV is 18,000 units how many of 20’’ TV should the company produce?
3. FOR 15’’ TV FOR 20 ’’TV

 Selling price 400 600

Variable cost 200 250

Contribution margin 200 350
 Produce

15’’ TV/h -----------------3 TV X Br 200 = br. 600

20’’ TV/h------------------1 TV x Br 350 = br. 350

15’’ TV is more profitable b/c contribution margin of 15’’ TV > 20’’ TV

Managers should choose the product with the highest contribution margin per unit of the constraining resource (factor).

18000 x 1 h = 6000 hours will use to produce 18,000 unit of 15’’ TV

 3

The remaining (8000 – 6000) 2000 hours is for producing 20 ‘’TV

So within 2000 hours the company will be produce 2000 unit of 20 ‘’ TV

1. **Utilization of a Constrained Resource**

Managers routinely face the problem of deciding how constrained resources are going to be used. A department store, for example, has a limited amount of floor space and therefore cannot stock every product that may be available. When a limited resource of some type restricts the company’s ability to satisfy demand, the company has a **constraint.**

***Contribution Margin per Unit of the Constrained Resource***

To illustrate, assume that, ABC makes 2 model products, model A & model B. Assume that the constrained resource is machine time required to produce the unit. Machine time required to produce one unit is 2 minute and 1 minute respectively for model A & B respectively.

Cost and revenue data for the two models is as follow:

 Model A Model B

Selling price per unit . . . . . . . . . . . . . . $25 $30

Variable cost per unit . . . . . . . . . . . . . . 10 18

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Contribution margin per unit . . . . . . . . $15 $12

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Contribution margin (CM) ratio . . . . . . . 60% 40%

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**Required**: Determine the most profitable use of a constrained resource and the value of obtaining more of the constrained resource.

Make a unit of that product. These calculations are carried out below for model A &B:

 Model A Model B

Contribution margin per unit (a) . . . . . . . . . $15.00 $12.00

Machine time required to

Produce one unit (b) . . . . . . . . . . . . . . . 2 minutes 1 minute

Contribution margin per unit of the

Constrained resource, (a) / (b) . . . . . . . $7.50 per minute $12.00 per minute

It is now easy to decide which product is less profitable and should be deemphasized.

Each minute on the machine that is devoted to model B results in an increase of $12.00 in contribution margin and profits. The comparable figure for model A is only $7.50 per minute. Therefore, the model B should be emphasized. Even though model A has the larger contribution margin per unit and the larger CM ratio, model B provides the larger contribution margin in relation to the constrained resource. To verify that model B is indeed the more profitable product, suppose an hour of additional stitching time is available and that unfilled orders exist for both products. The additional hour on the stitching machine could be used to make either 30 model A (60 minutes / 2 minutes per model A) or 60model B (60 minutes /1 minute per model B), with the following profit implications:

 Model A Model B

Contribution margin per unit . . . . . . . . $ 15 $ 12

Additional units that can be

Processed in one hour . . . . . . . . . . . \* 30 \* 60

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Additional contribution margin . . . . $450 $720

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Since the additional contribution margin would be $720 for model B and only$450 for model A, model B make the most profitable use of the Company’s constrained resource—the machine.