

Segment Reporting and the Contribution Approach



The issue of "Segment Reporting" and "the Contribution Approach" is the implication of the managerial philosophy like "Decentralization Divisionalization". Segment reporting is one way to measure performance in a divisionalized organization, where as "contribution approach" is a way of segment reporting. Thus this unit covers some of fundamental issues. To cover most of the issues, this unit will include the following lessons:

Decentralized organizations;

Segment Reporting and Profitability Analysis (Contribution Approach);

Transfer Pricing; and

IAS relating to Segment Reporting;

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Lesson 1 : Decentralized Organizations

The content of this lesson will be a repetition of a unit of management course. Before going to discuss the role of management accountants in decentralized organizations, it will be wise to recapitulate related important issues of decentralization.

After completing this lesson, you are expected to be able to:

- Explain various concepts relating to decentralization;
- Identify various advantages and disadvantages of decentralization;
- Explain the concept of delegation of authority and its advantages; and
- Explain the concept of divisionalization.

The concept of 'decentralization' is very much related to some concepts of management like (i) power; (ii) authority, (iii) line; (iv) staff and (v) delegation. It is better to explain these terms in brief.

Authority

[Jerry M. Rosenberg]

(i) Authority "describes the relationship in an organization between positions and expectations of members. It also specifies behavior necessary for company effectiveness and is a cost of organizational membership."

(ii) Authority is "the power possessed by an individual for making decisions and carrying them out."

[Heinz Wehrich & Harold Koontz]

(iii) "Authority in organization is the right in a position (and through it, the right of the person occupying the position) to exercise discretion in making decisions affecting others. It is, of course, one type of power."

Authority is the power possessed by an individual for making decisions and carrying them out.

Power

[Rosenberg]

"The ability to control others in an organization, utilizing personal presentation and other personal characteristics, various approaches for reward and punishment, position title, and level of competence and experience."

[Wehrich & Koontz]

"Power, a much broader term than authority, is the ability of individuals or groups to induce or influence the beliefs or actions of other persons or groups."

Power, a much broader term than authority, is the ability of individuals or groups to induce or influence the beliefs or actions of other persons or groups.

Bases of Power:

(a) Legitimate Power: It arises from positions and derives from our cultural system of rights, obligations and duties whereby a position is accepted by people as being legitimate.

(b) Expert Power: This is the power of knowledge. Physicians, lawyers and university professors may have considerable influence on others because they are respected for their special knowledge. Power may further exist as referent power, that is, influence that people or groups may exercise because people believe in them and their ideas.

(c) Reward Power: Power may arise from the ability of some persons to grant rewards.

(d) Coercive Power: It is the power to punish.

Authority arises from the power of position or legitimate power.

Line and Staff Authority Relationship

[Rosenberg]

A part of the organization identified as those having the right to decide and to order others to perform activities (line).

Line and staff authority:

a part of the organization identified as those having the right to decide and to order others to perform activities (line) and those having the right to plan, recommend, advice or assist but not to order others to perform activities (staff).

Line authority:

authority that is exerted downward i.e. over subordinates in an organization.

Staff:

employees who advise and assist line managers and employees but are not directly engaged in the production of the final good or service.

Staff function:

service, advisory, or otherwise supportive activities performed by staff units in line and staff organizations.

The nature of line and staff relationship:

Line authority is that relationship in which a supervisor exercises direct supervision over a subordinate- an authority relationship in direct line or step.

"The nature of the staff relationship is advisory. The functions of people in a pure staff capacity is to investigate, research and give advice to line managers."

Scalar Principle:

"The clearer the line authority from the ultimate management position in an enterprise to every subordinate position, the clearer will be the responsibility for decision making and the more effective will be the organization communication."

Functional Authority:

It is "the right that is delegated to an individual or a department to control specific processes, practices, policies or other matters relating to activities undertaken per persons in other departments."

Decentralization and Centralization

Decentralization

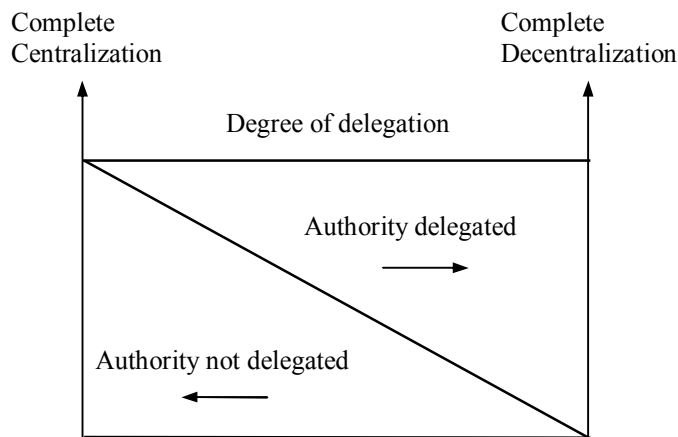
[Rosenberg]

Decentralization is "a situation in which decisions tend to be made at lower levels in a firm or at the country operating levels rather than head quarters."

[Koontz]

Decentralization is the tendency to disperse decision making authority in an organization structure. It is a fundamental aspect of delegation; to the extent that authority is not delegated, it centralized."

A situation in which decisions tend to be made at lower levels in a firm or at the country operating levels rather than head quarters.



The degree to which formal authority is delegated by managers throughout the organization runs along a continuum from decentralization to centralization.

Centralization

[Koontz]

a. Centralization of Performance: It pertains to geographic concentration; it characterizes a company operating in a single location.

b. Departmental Centralization: It refers to concentration of specialist activities, generally, in one department.

c. Centralization as an aspect of management: It is the tendency to restrict delegation of decision making. A high degree of authority is held at or near the top by managers in the organizational hierarchy.

Advantages of Decentralization

[Wehrich & Koontz]

- (i) Relieves top management of some burden of decision making and forces upper-level managers to let go.
- (ii) Encourages decision-making and assumption of authority and responsibility.
- (iii) Gives managers more freedom and independence in decision making.

- (iv) Promotes establishment and use of broad controls which may increase motivation.
- (v) Makes comparison of performance of different organizational units possible.
- (vi) Facilitates setting up of profit centers.
- (vii) Facilitates product diversification.
- (viii) Promotes development of general managers.
- (ix) Aids in adaptation to fast changing environment.

Limitations of Decentralization
[Welhrich & Koontz]

- (1) Makes it more difficult to have a uniform policy.
- (2) Increases complexity of coordination of decentralized organizational units.
- (3) May result in loss of some control by upper-level managers.
- (4) May be limited by inadequate control techniques.
- (5) May be constrained by inadequate planning and control systems.
- (6) Can be limited by the availability of qualified managers.
- (7) Involves considerable expenses for training managers.
- (8) May be limited by external forces (national labor union given mental control, tax policies).
- (9) May not be favored by economies of scale of some operations.

Centralization is preferable for the following reasons:

- (a) Specialized skills, talents, and technology are sometimes neither affordable nor practical in multiple locations.
- (b) Decentralized locations usually mean an increase in overheads and staff. Coordination of products, money and control also add to the cost of decentralized locations.
- (c) Recent improvements in communication technology facilitate the movement of money, credit information, transportation and data processing from a central location.

Delegation of Authority:

Rosenberg

Delegation is the process by which authority is distributed downward in the organization.

[Stoner et al.]

Delegation is the assignment to another person of formal authority (legitimate power) and accountability for carrying out specific activities.

Delegation is the process by which authority is distributed downward in the organization.

Advantages of Delegation:

Delegation has the following advantages:

- (i) The more tasks managers are able to delegate, the more responsibilities they have to seek and accept increased responsibilities from higher level managers.
- (ii) Delegation causes employees to accept accountability and exercise judgment. This not only helps train them, but also improves their self confidence and willingness to take initiative.
- (iii) It frequently leads to better decisions because employees; closest to where the action is, are likely to have a clear view of the facts.
- (iv) Effective delegation also speeds up decision making.

Divisionalization

This section is based on the thoughts of David Solomons. According to him, it is not wise to use “Decentralization” and “Divisionalization” as synonyms. The devolution of authority to make decisions, which is the essence of decentralization is often carried out in businesses which are not divisionalized. Divisionalization adds to decentralization, the concept of delegation of profit responsibility. According to this concept, a division is defined as:

“a company unit headed by a man fully responsible for the profitability of its operations, including planning, production, financial and accounting activities and who usually, although not always, has his own sales force. The division may be a unit of the parent company or it may be a wholly or partially owned subsidiary.”

Divisional Organizations and Functional Organizations

Functional Organizations: [J.M. Rosenberg]

Originated by F.W. Taylor, “a functional organization, currently, refers to a type of organizations in which the direction and management of work is divided according to specialized functions or duties, rather than pure line or staff areas of specialization.” Functional organizations are based on the principle of functional departmentation which means grouping of activities into subunits based on the primary functions of the organization, such as engineering, production, purchasing, personnel and marketing. Here, no department is responsible for the entire work of buying of raw materials, conversion of raw materials into finished products and selling finished products to consumers.

A functional organization, currently, refers to a type of organizations in which the direction and management of work is divided according to specialized functions or duties.

Divisional Organizations:

Divisional organizations are organizations with autonomous units. Responsibility of performance rests with division or section managers who operate the divisions as if they were separate from the parent organization.

Reasons for Divisionalization

David Solomons suggested the following reasons for divisionalization:

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- (i) A divisional structure makes diversification relatively easy for a desiring company to combine diversity with unity.
- (ii) “A great improvement is behind to result in any firm when the creative talents of responsible individuals are encouraged to develop a climate of individual responsibility, authority and dignity a climate that is made possible by decentralization of decision-making.
- (iii) ‘Since the principal objective of divisional management is the long-run maximization of the division’s contribution to the profitability of the corporations as a whole, there is a ready available measure of divisional success in the form of profit contribution.’
- (iv) Divisional operations provide a first-rate training ground for the development of company’s future senior management.

The remaining lessons of this unit will be devoted to issues relating to measurement of contributions by independent divisions and other related issues.

Lesson-2: Segment Reporting and Profitability Analysis (Contribution Approach)

Divisionalized / Decentralized organizations have added responsibility of measuring the performance of organizational units enjoying delegated authority. This lesson is designed to cover the issue of measuring divisional performance and reporting.

After completing this lesson, you are expected to be able to:

- Identify three business practices that hinder proper cost assignment;
- Prepare a segmented income statement using the contribution format;
- Explain the difference between traceable fixed costs and common fixed cost; and
- Explain how to determine customer profitability.

Segment Report and Profitability Analysis [Contribution Approach]

At period end, aggregated income statements are prepared to measure the amount of profit earned or losses incurred by organizations during a particular accounting year. This aggregated income statement may satisfy the external users. But the top management of a divisionalized firm may not be satisfied with this summarized statement. Internal management may need such statements which can help identify bad/good performing segments so that it can take appropriate steps for improvement.

Various Concepts

Segment:

A segment can be defined as any part or activity of an organization about which a manager seeks costs, revenue or profit data. (Garrison)

Segment reporting:

‘An analysis of sales, profit or assets by line of business or by geographical area. This analysis is required to be disclosed for reportable segments by certain enterprises. (Rosenberg).

Segment revenue:

‘Revenue reported in the enterprises income statement that is directly attributable to a segment or can be reasonably allocated to it.

Segment expense:

‘Expenses resulting from the operating activities of a segment that are directly attributable to the segment or can reasonably be allocated to it.

Segment results:

Difference between segment revenues and segment expenses.

Common costs:

The costs that are borne by all the output of a process, or those costs shared by a number of departments. Common costs are those associated

with the corporate headquarters building. Common costs relate to overall operating activities in a company, a common costs can't be traced to a particular segment.

Traceable Costs: [Kohler]

“Any cost whose original transaction character is maintained or can be followed after its transfer or allocation to another account.”

Traceable costs are costs which can be identified with any product or department.

Value-chain: [Horngren]

‘The value chain is the set of business functions that adds value to the products or services of an organization. These functions are as follows:

- a. Research and Development
- b. Design of products, services or processes
- c. Production
- d. Marketing [Informing the society about the product]
- e. Distribution [Delivering the product]
- f. Customer Service
- g. Support Functions [MIS & Accounting]

Product Life Cycle: [Horngren]

‘Product life cycle refers to the various stages through which a product passes from conception and development through introduction into the market through maturation and finally, withdrawal from the market.’

Stages of Product Life Cycle	Nature of Sales
Product Development	No sales
Introduction to market	Sales Growth
Mature Market	Stable Sales Level
Phase-out of products	Low sales -----> No sales

Cross-Subsidization: [Garrison]

Cross-subsidization or cost distortion occurs when costs are improperly assigned among either products or company segments. Cross-subsidization can occur in two ways: first, when companies fail to trace costs directly to segments or products in those situations where it is feasible to do so; and second, when companies use inappropriate bases to allocate costs.

Segment Performance Measurement:

Segments are “responsibility centers for which a separate measure of revenues and costs is obtained.” Therefore, controllable costs of a segment must be determined. Comparatively, it is easy to identify the revenues of a segment.

Uncontrollable Costs: An uncontrollable cost is ‘any cost that cannot be affected by the management of a responsibility center within a given time span’.

Controllable Costs: Controllable costs include all costs that are influenced by a manager’s decision and actions. Reporting controllable costs provides evidence about a managers’ performance. Costs that are completely uncontrollable tell nothing about a manager’s decisions and actions, because nothing a manager does will affect the cost. Naturally, such costs should be ignored in evaluating the performance of a segment.

Hindrances to Proper Cost Assignment:

For proper segment reporting, costs must be analysed and assigned to segments as reasonably as possible. More specifically, all attributable costs should be assigned to segments. Naturally, questions arise about the allocation of common costs not attributable to segments. Traditionally, common costs are allocated to products/segments/customers based on certain methods. Most of these accounting methods are inappropriate and result in distorted costs. Unfortunately, three business practices are in use that greatly hinder proper cost assignment. These three practices are (i) omission of some costs in the assignment process, (ii) the use of improper methods for allocating costs among segments, and (iii) assignment of costs to segments that are really common costs of the entire organization (Garrison and Noreen).

Two Approaches of Segment Reporting:

There are two approaches available for segment reporting. These are:

- (a) Horngren’s Approach
- (b) Garrison’s Approach

Let us explain these approaches quoting two examples from those texts.

Horngren’s Approach:

**Baleycorng Inc.
Contribution Approach: (Model Income Statement
by Segments in Tk.‘000)**

Particulars	Breakdown			Breakdown of west Division				Breakdown W.D. Meat only		
	Company as a whole	East Division	West Division	Not allocated	Grousing	Produce	Meats	Not allocated	Store 1	Store 2
	Tk.	Tk.	Tk.	Tk.	Tk.	Tk.	Tk.	Tk.	Tk.	Tk.
Net Sales	4,000	1,500	2,500	-	1300	300	900	-	600	300
Variable cost of Merchandise sold	3,000	1,100	1,900		1,000	230	670		450	220
Variable Operating Exp.	260	100	160		100	10	50		35	15
Total Variable cost	3,260	1,200	2,060		1,100	240	720		485	235
(a) Contribution Margin	740	300	440		200	60	180		115	65
Less fixed costs controllable by segments managers	260	100	160	20	40	10	90	30	35	25

(b) Contribution Controllable by segment managers	480	200	280	(20)	160	50	90	(30)	80	40
Less fixed costs controllable by other	200	90	110	20	40	10	40	10	22	8
(c) Contribution by segments	280	110	170	(40)	120	40	50	(40)	58	32
Less Uncontrollable costs	100									
(d) Income before income taxes	180									

Special features:

- (i) Contribution Margin: Net Sales – Total Variable Costs
- (ii) Contribution Controllable by segment managers: Contribution Margin – Fixed Costs controllable by segment management
- (iii) Segment Contribution: Contribution controllable by segment manager – Fixed costs controllable by others.

Garrison’s Approach:

**Soft Solutions, Inc.
Segmented Income Statement
[Contribution Format]**

Particulars	Total Company	Segments	
		Business Product Division	Consumer Product Division
Sales	Tk. 500,000	Tk. 3,00,000	Tk. 200,000
Less Variable expenses:			
Variable cost of goods sold	180,000	1,20,000	60,000
Other variable expenses	50,000	30,000	20,000
Total Variable Expenses	230,000	1,50,000	80,000
Contribution Margin	270,000	1,50,000	1,20,000
Less Traceable Fixed Expenses	170,000	90,000	80,000
Divisional Segment Margin	100,000	60,000	40,000
Less Common Fixed Expenses	85,000		
Net Income	15,000	-	-

Statement of Product Line Segment Margin

	Consumer Product Division	Segments	
		Clip Art	Computer Games
Sales	Tk. 200,000	Tk. 75,000	Tk. 125,000

Less Variable expenses:			
Variable cost of goods sold	60,000	20,000	40,000
Other variable expenses	20,000	5,000	15,000
Total Variable Expenses	80,000	25,000	55,000
Contribution Margin	120,000	50,000	70,000
Less Traceable Fixed Expenses	70,000	30,000	40,000
Product Line Segment Margin	50,000	20,000	30,000
Less Common Fixed Expenses	10,000		
Divisional Segment Margin	40,000	-	-

Statement of Channel Segment Margin

	Computer Games	Segments	
		Retails Stores	Catalog Sales
	Tk.	Tk.	Tk.
Sales	1,25,000	1,00,000	25,000
Less Variable expenses:			
Variable cost of goods sold	40,000	32,000	8,000
Other variable expenses	15,000	5,000	10,000
Total Variable Expenses	55,000	37,000	18,000
Contribution Margin	70,000	63,000	7,000
Less Traceable Fixed Expenses	25,000	15,000	10,000
Territorial Segment Margin	45,000	48,000	(3,000)
Less Common Fixed Expenses	15,000		
Product line Segment Margin	30,000	-	-

Special Features:

- (i) Contribution Margin: Sales – Total Variable Expenses
- (ii) Product Line Segment Margin:
Contribution Margin – Traceable Fixed Expenses to product Line
- (iii) Territorial Segment Margin:
Contribution Margin – Traceable Fixed Expenses to territorial segment

Example # 1

The most recent monthly income statement for Reston Company is given below:

**Reston Company
Income Statement
For the Month Ended May 31, 2007**

Sales	Tk.900,000	100%
Less Variable expenses	408,000	45.3%
Contribution margin	492,000	54.7%
Less fixed expenses	465,000	51.7%
Net Income	27,000	3.0%

Management is disappointed with the company’s performance and is wondering what can be done to improve profits. By examining sales and cost records, you have determined the following:

- (a) The company is divided into two sales territories-Central and Eastern. The Central territory recorded Tk.4,00,000 in sales and Tk.2,08,000 in variable expenses during May. The remaining sales and variable expenses were recorded in the Eastern territory. Fixed expenses of Tk.1,60,000 and Tk.1,30,000 are traceable to the Central and Eastern Territories respectively. The rest of the fixed expenses are common to two territories.
- (b) The company sells two products-Awls and Pows. Sales of Awls and Pows totaled Tk.1,00,000 and Tk.3,00,000 respectively, in the central Territory during May. Variable expenses are 25% of the selling price for Awls and 61% for Pows. Cost records show that Tk.60,000 of the Central Territory’s fixed expenses are traceable to Awls and Tk.54,000 to Pows, with the remainder common to the two products.

Prepare a segment income statement

Solution:

[Garrison Format]

**Reston Company
Segmented Income Statement
For May 31, 2007**

Particulars	Total Company	Segments	
		Central	Eastern
	Tk.	Tk.	Tk.
Sales	9,00,000	4,00,000	5,00,000
Less: Variable Expenses	4,08,000	2,08,000	2,00,000
Contribution Margin	4,92,000	1,92,000	3,00,000
Less: Traceable Fixed Costs	2,90,000	1,60,000	1,30,000

Divisional Segment Margin	2,02,000	32,000	1,70,000
Less: Common Fixed Costs	1,75,000		
Net Income	27,000		

**Reston Company: Central Division
Product Line Segment Margin Statement
For May, 2007**

Particulars	Central Division as a whole	Segments	
		Awls	Pows
	Tk.	Tk.	Tk.
Sales	400,000	100,000	300,000
Less Variable Expenses	208,000	25,000	183,000
Contribution Margin	192,000	75,000	117,000
Less Traceable Fixed Expenses	114,000	60,000	54,000
Product Line Segment Margin	78,000	15,000	63,000
Less Common Fixed Costs	46,000		
Divisional Segment Margin	32,000		

Horngren's Approach:

**Reston Company
Segment Income Statement
For May, 2007**

Particulars	Breakdowns			Breakdown of Central		
	Company as a whole	Central Division	Eastern Division	Not Allocated	Awls	Pows
	Tk.	Tk.	Tk.	Tk.	Tk.	Tk.
Sales	900,000	4,00,000	500,000	-	1,00,000	300,000
Less Variable Expenses	408,000	2,08,000	200,000	-	25,000	1,83,000
(a) Contribution Margin	492,000	1,92,000	300,000	-	75,000	1,77,000
Less Fixed Costs Controlled by segments	290,000	1,60,000	130,000	46,000	60,000	54,000
(b) Contribution Controllable by segment managers	202,000	32,000	170,000	(46,000)	15,000	63,000
Less Uncontrollable Fixed costs	175,000					
Net Income	<u>27,000</u>					

Customers' Profitability Analysis:

While customers are clearly important to profit, some are more profitable than others. Companies that assess the profitability of various customer groups can accurately target their markets and increase profits. The first step in determining customer profitability is to identify the customers. The second step is to determine which customers add value to the company. Once customer groups are identified, the second step is to determine which customer groups are the most profitable, work to keep the existing customers in those groups and add more of them.

Example # 2

Oline Company manufactures and distributes carpentry tools. Production of the tools is in the mature portion of the product life cycle. Oline has a sales force of 20. Sales people are paid a commission of 7 percent of sales plus expenses of Tk.35 per day for days spent on the road away from home, plus Tk. 0.30 per mile. They deliver products in addition to making the sales, and each sales person is required a truck suitable for making deliveries.

Sales	Tk.13,00,000
Cost of Goods sold	4,50,000

On average, a sales person travels 6,000 miles per quarter and spends 38 days on the road. The fixed marketing and administrative expenses total Tk.400,000 per quarter.

Required:

- (i) Prepare an income statement for Oline Company for the next quarter.
- (ii) Suppose that a large hardware chain, Mega Hard Ware Inc. wants Oline Company to sell 80% of total output to the chain. The tools will be imprinted with the super tool brand, requiring Oline to purchase new equipment, use somewhat different materials and reconfigure the production line. Olines industrial engineers estimate that cost of goods sold for the Super Tool line would increase by 15 percent. No sales commission would be incurred, and Mega hardware would link Oline to its EDI system. This would require an annual cost of Tk.100,000 on the part of Oline. Mega Hardware would pay shipping. As a result, the sales force would shrink by 80%. Should Oline accept Mega Hardware’s offer? Support your answer with appropriate calculation.

Solution: (i)

**Oline Company
Income Statement
For the Next Quarter**

Sales		Tk.13,00,000
Less Cost of Goods sold:		450, 000
Gross Profit		<u>Tk.8,50,000</u>
Less Operating Expenses:		
Fixed Marketing & Administration Expenses:	Tk.400,000	
Variable selling & distribution expenses:		
Commission: @ 7%	Tk.91,000	
Traveling expenses $6000 \times .3 \times 20$	36,000	
Per day Tk. $35 \times 38 \times 20 =$	26,600	
		<u>5,53,600</u>
Net Income:		<u>Tk.2,96,400</u>

Solution: (ii) Evaluation of the offer by Megahardware

**Oline Company
Income Statement
for the next quarter**

Sales		Tk.13,00,000
Less Cost of Goods sold: $Tk.450,000 \times 1.15$		<u>5,17,500</u>
Gross Profit		Tk.7,82,500
Less Operating Expenses:		
Fixed Marketing & Administration Expenses:	Tk.425,000	
Variable selling & Administrative expenses:	<u>30,720</u>	
$Tk.1,53,600 \times .2$		<u>4,55,720</u>
Net Income:		<u>Tk.3,26,780</u>

Oline should accept Mega Hardware's offer as the net income during the next quarter will go up by Tk.30,380 (Tk.3,26,780 – Tk.296,400).

Lesson-3: Transfer Pricing

In a decentralized environment, when goods and services are transferred from one autonomous unit to another, the pricing of transferred goods and services may create problems between sending units and receiving units regarding the price to be charged, because profit increase of a unit on account of this will be a loss to another unit. So, there should be some way to resolve this issue.

After completing this lesson, you are expected to be able to:

- Grasp the various types of transfer prices;
- Explain the importance of transfer price, and
- Explain the transfer price in a multi-national setting.

Transfer Pricing

[Penguin Dictionary of Accounting]

“The notional or real price charged by one part of a company (or group of companies) to another part when goods or services are transferred. In the context of multi-national organizations, the manipulation of transfer prices is designed to enable profit to be moved from higher tax to low tax countries.”

[Rosenberg]

“Transfer price is the price charged by one segment of an organization for a product or service it supplies to another part of the same part. Transfer cost is the cost that a department accepts for items supplied by other departments.”

Transfer price is the price charged by one segment of an organization for a product or service it supplies to another part of the same part.

The meaning of ‘transfer price’ is very simple. Transfer prices are the prices charged for goods produced by one division and transferred to another division. The price charged affects the revenues of transferring divisions and the costs of the receiving division. As a result, the profitability, return on investment and managerial performance evaluation of both divisions are affected.

The Impact of Transfer Pricing on Income

Under normal situation, a price used for transferring goods and services from one division to another division will affect the performance of both the divisions involved, but the performance of the firm as a whole may remain unaffected.

Example # 1

ABC Inc.

A Division	C Division
<i>Transferring Division</i>	<i>Receiving Division</i>
Division-A produces parts and transfers to C for a transfer price of Tk.50 per unit.	Division C purchases parts from A at a transfer price of Tk.50 per unit and uses in production of final product.

Transfer Price = Tk.50 per unit <ul style="list-style-type: none"> • Revenue to A • Increases net income • Increases ROI 	Transfer Price = Tk.50 per unit <ul style="list-style-type: none"> • Cost to C • Decreases net income • Decreases ROI
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$$\text{Transfer Price Revenue} = \text{Transfer Price Cost}$$

Zero Impact on ABC Inc.

While the actual transfer price nets out for the company as a whole, transfer pricing can affect the level of profits earned by the company as a whole, if it affects divisional behavior. Divisions, acting independently, may set transfer prices that maximize divisional profits but adversely affect firm wide profit.

Extension of the Last Example:

A Division	C Division
<i>Transferring Division</i>	<i>Receiving Division</i>
Transfer Price : Tk.50 per unit	Transfer Cost : Tk.50 per unit
Variable Cost : Tk.35 per unit	Outside Cost : Tk.45 per unit
Contribution : Tk.15 per unit	Decision to buy from outside
Decision : No transfer	Savings: Tk.5 per unit
Loss of profit : Tk.15 per unit	Net Income increases

ABC Inc. as a Whole will lose Tk.10.00 per unit

$$[\text{Internal cost Tk.35} < \text{External Cost Tk.45}]$$

The Transfer Pricing Problem:

A transfer pricing system should satisfy the following three objectives:

- (i) Accurate Performance Evaluation:** This means that no one division managers should benefit at the expense of another.
- (ii) Goal congruence:** This means that divisional managers should select actions that maximize firm wide profits.
- (iii) Preservation of Divisional Autonomy:** Central management should not interfere with the decision-making freedom of divisional managers.

The transfer pricing problem concerns finding a system that simultaneously satisfies all the above mentioned objectives. One can evaluate the degree to which a transfer price satisfies the objectives of a transfer pricing system by considering the opportunity cost of goods transferred. The opportunity cost approach is compatible with the objectives of performance evaluation, goal congruence and autonomy.

The opportunity cost approach identifies the following:

- (i) The minimum transfer price:** [Floor price] It is the transfer price that would leave the selling division no worse off if the goods are sold to an interested internal division.
- (ii) The maximum transfer price:** [Ceiling price] It is the transfer price that would leave the buying division no worse off if an input is purchased from an internal division.

The opportunity cost rule signals when it is possible to increase firm wide profits through internal transfer.

Types of Transfer Prices

Inter-divisional transfers may follow any of the following prices:

- (a) Market Price
- (b) Negotiated Transfer Prices
- (c) Cost-Based Transfer Prices:
 - (i) Full-cost transfer price
 - (ii) Full-cost plus markup
 - (iii) Variable cost plus fixed fee

Market Price as a Transfer price

Competitive market price is generally regarded as the best approach to the transfer-pricing problem. It dovetails with the profit center concept and makes profit-based performance evaluation feasible at many levels of an organization. To the extent the transfer prices reflect actual market conditions divisional operating results provide an excellent basis for evaluating managerial performance.

The following guidelines should be followed when using market prices to control transfers between divisions: [Garrison]

- (a) The buying division must purchase internally so long as the selling division meets all bonafide outside prices and wants to sell internally.
- (b) If the selling division does not meet all bonafide outside prices, then the buying division is free to purchase outside.
- (c) The selling division must be free to reject internal business if it prefers to sell outside.
- (d) An impartial board must be established to help settle disagreements between divisions over transfer prices.

Transfers at Market Price

Well-defined Intermediate Market

An intermediate market means that a market exists in which an item can be sold immediately and in its present form to outside customers.

Transfer Price = Variable Costs + Lost Contribution margin on outside sales.

Transfers at Market Price:

Price charges in the intermediate market

(a) Selling division at full capacity: Transfer Price = Variable costs + Lost Contribution per unit on outside sales

(b) Selling Division with idle capacity: “Under idle capacity situation, so long as the selling division receives a price greater than its variable

costs, all parties will benefit by keeping business inside the company rather than having the buying division go outside.” Otherwise, there will be “sub-optimization” which means that the overall level of profitability will be less than the segment or the company is capable of earning.

Negotiated Transfer Price

Perfectly competitive markets rarely exist. When imperfection exists to the market for the intermediate products, market price may no longer be suitable. In such situations, negotiated transfer prices may be practical alternatives. A negotiated transfer price is one agreed on between the buying and selling divisions that reflects unusual or mitigating situations. In the absence of intermediate market the negotiated transfer price is the only alternative.

When imperfection exists to the market for the intermediate products, a negotiated transfer price is one agreed on between the buying and selling divisions that reflects unusual or mitigating situations.

Disadvantages of Negotiated transfer prices:

Negotiated transfer prices have three disadvantages that are commonly mentioned below:

- (i) One divisional manager possessing private information, may take advantage of another divisional manager.
- (ii) Performance measures may be distorted by the negotiating skills of managers.
- (iii) Negotiations can consume considerable time and resources.

Advantages of Negotiated Transfer prices:

Being time consuming, negotiated transfer prices offer some hope of complying with the three criteria of *good congruence*, *autonomy*, and *accurate performance evaluation*. If negotiation helps ensure goal congruence, the temptation for central management is diminished considerably.

Finally, if negotiation skills of managers are comparable or if the firm views these skills as an important managerial skill, concerns about motivation and accurate performance measures are avoided.

Cost-Based Transfer Prices

Many firms make transfers between divisions on a basis of the accumulated cost of the goods being transferred thus ignoring any profit element to the selling division. There may be three forms of cost-based transfer prices- (i) Full cost, (ii) Full costs plus markups and (iii) Variable cost plus fixed fee. In all three cases, to avoid passing on the inefficiencies of one division to another, standard costs should be used to determine the transfer price.

Full Cost Transfer pricing:

Full cost = Direct material + Direct Labour + Factory Overhead.

It is simple. But it is the least desirable type of transfer pricing. It can provide perverse incentives and distort performance measures. Managers will not be interested in transferring at full cost.

Full Cost Plus Markup:

Full cost plus markup suffers from virtually the same problems as full cost. It may be the result of negotiations.

Variable Cost Plus Fixed Fee:

Like full cost plus markup, variable cost plus fixed fee can be a useful transfer pricing approach provided that the fixed fee is negotiable. This method has one advantage over full cost plus markup: if the selling division is operating below capacity, variable cost is its opportunity cost. Assuming that the fixed fee is negotiable, the variable cost approach can be equivalent to negotiated transfer pricing. Negotiation with full consideration of opportunity costs is preferred.

Example # 1

A company has two divisions, A and B. The division A is currently operating at full capacity. It has been asked to supply its product to division B. Division A sells its product to its regular customers for Tk.30 each. Division B (currently operating at 50% capacity) is willing to pay Tk.20 each for the component produced by division A (This represents the full absorption cost per component at division A).

The components will be used by division B in supplementing its main product to conform to the need of special order.

As per the contract terms of sales, the buyer calls for reimbursement of full cost to division B plus 10%.

Division A has a variable cost of Tk.17 per component. The cost per unit of division B subsequent to the buying part from division A is estimated as follows:

	Taka
Purchased parts – outside vendors	90
Purchased part from division A	20
Other variable costs	50
Fixed overheads and administration	40
Full costs:	<u>Tk.200</u>

The company uses return on investment in the measurement of division and divisional manager’s performance.

Required:

- (i) As a manager of division A, would you recommend sales of your output to division B at the stipulated price of Tk.20?
- (ii) Would it be in the over-all interest of the company for division A to sell its output to division B?
- (iii) Suggest an alternative transfer price and show how could it lead to goal congruence.

Solution:

(i) Division A is running at capacity.

Selling Price to outside customer	:	Tk.30
Variable cost per component	:	Tk.17
Performance measure	:	ROI
Offer Price	:	Tk.20

As a manager of divisional I will not accept the transfer price of Tk.20 per component. This will reduce per unit profit by Tk.10 and also the division's ROI.

(ii) Decision Analysis: [Whether to transfer from division A to Division B]

	Sold externally	Transfer to B
Selling Price:	<u>Tk.30</u>	<u>Tk.220</u>
Less relevant costs:		
For Part-A	17	17
For outside part	–	90
Other variable cost	=	<u>50</u>
Total relevant costs	<u>17</u>	<u>157</u>
Contribution per component	<u>13</u>	<u>63</u>

In the overall interest of the company, division A should sell to division B. Profit per component will go up by Tk.50 (Tk.63 – Tk.13).

(iii) As long as division's performance is measured by ROI, suggested alternative should not affect the profit of a division, which is running at capacity. It will not be wise to suggest an alternative, which will reduce the project and ROI of a selling division which is running at capacity. First suggested transfer price will be:

Variable costs + Lost contribution margin on outside sale

$$= \text{Tk.}17 + 13 = \text{Tk.}30$$

This will on the other, hand increased the cost of the receiving division, the selling price as per contract and also the profit.

Division - B		
	Present	Suggested
Purchased Part: Outside	Tk.90.00	Tk.90.00
Purchased Part Division-A	20.00	30.00
Other Variable Cost	50.00	50.00
Fixed overhead & Administrative costs	<u>40.00</u>	<u>40.00</u>
	<u>200.00</u>	<u>210.00</u>
Profit @ 10%	<u>20.00</u>	<u>21.00</u>
Selling Price	<u>Tk.220.00</u>	<u>Tk.231.00</u>

Profit per unit will go up by Tk.1 in division B and at the same time the profit and division – A will remain unchanged.

Example # 2

The Components Division produces a part that is used by the Goods Division. The cost of manufacturing the part is given below:

	<u>Tk.</u>	
Direct Materials	10.00	per unit
Direct Labour	2.00	”
Variable Overhead	3.00	”
Fixed Overhead	5.00	”
Total Costs	<u>20.00</u>	”

Fixed cost is based on a practical volume at 200,000 parts.

Other costs incurred by the Components Division are as follows:

	Tk.
Fixed Selling and Administrative	5,00,000
Variable Selling	Tk.1 / unit

The part usually sells for between Tk.28 and Tk.30 in the external market. Currently, the Components Division is selling it to external customers for Tk.29. The division is capable of producing 2,00,000 units of the part per year; however, because of a weak economy, only 1,50,000 parts are expected to be sold during the year. The variable selling expenses are avoidable if the part is sold internally.

The Goods Division has been buying the same part from an external supplier for Tk.28. It expects to use 50,000 units of the part during the coming year. The manager of the Goods Division has offered to buy 50,000 units from the components division for Tk.18 per unit.

Required:

- (i) Determine the minimum transfer price that the Components Division would accept.
- (ii) Determine the maximum transfer price that the manager of the goods division would pay.
- (iii) Should an internal transfer take place? Why? If you were manager of the components division would you sell the 50,000 components for Tk.18 each? Explain.
- (iv) Suppose, that the average operating assets of the components division total Tk.100 lakhs, compute the ROI for the coming year, assuming that the 50,000 units are transferred to the Goods division at Tk.21 each.

Solution:

(i) Existence of unutilized capacity of 50,000 units.

Minimum transfer price per unit.	
Variable cost per unit	: Tk.15.00
Direct Materials	: Tk.10.00
Direct Labour	: 2.00
Variable Overhead	: <u>3.00</u>
	<u>Tk.15.00</u>

(ii) Maximum transfer price : Tk.28.00
[Cost of external source]

(iii) Yes, there should be internal transfer.

Components division will gain:	
(Tk.18-15)×50,000 =	Tk.150,000
Goods division will gain: (Tk.28-Tk.18) 50,000 =	<u>500,000</u>
Corporation will gain:	<u>Tk.650,000</u>

(iv) Component Divisions' ROI

Total Contribution: (Tk.29-Tk.15) 150,000 =	Tk.21,00,000
(Tk.21 – Tk.15) 50,000 =	<u>300,000</u>
	Tk.24,00,000

Less Fixed Expenses:

Fixed Production Overhead	: Tk.10,00,000
Fixed Selling & Administrative	: 5,00,000
Variable selling	: <u>1,50,000</u> <u>16,50,000</u>

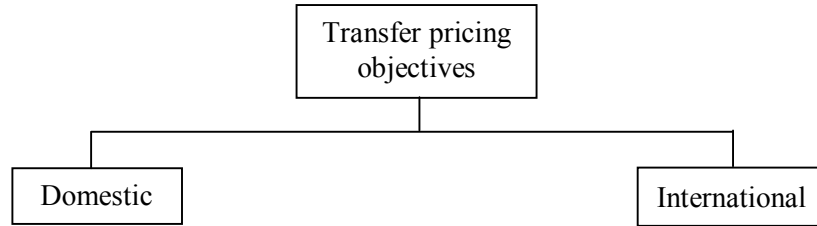
Net Income: Tk.7,50,000

$$\text{ROI} : \frac{\text{Net Income}}{\text{Operating Assets}} = \frac{\text{Tk.750,000} \times 100}{\text{Tk.100,00,000}}$$

$$= 7.5\%$$

International Aspect of Transfer Pricing:

The creation of foreign subsidiaries and bases of operation for cross border flow of services, trademarks, funding and technology is having a significant impact on the issue of transfer pricing in today's international business scenario. The objectives of multi-national transfer pricing are different from domestic transfer pricing.



- Greater divisional autonomy
- Greater motivation for managers
- Better performance evaluation
- Better goal congruence
- Less taxes, duties and tariffs
- Less foreign exchange risk
- Better competitive position
- Better governmental relations.

In case of domestic transfer pricing, divisional performance, divisional autonomy are important along with overall performance of the enterprise. But in a multinational setting, overall performance of the enterprise is sensitive to the geographic, political, and economic circumstances in which they are operating and set transfer prices in such a way as to optimize total company performance.

Example # 3

An item produced by Division A in a country with a 25% income tax rate is transferred to Division B in a country with a 50% income tax rate. In addition, an import duty equal to 20% of the price of the item is assessed. Suppose the full unit cost of the item is Tk.100 and the variable cost is Tk.60. If tax authorities allow either variable or full-cost transfer prices, which should be chosen? Assume that import duties are not deductible for tax purpose.

Solution:

Effect of Transferring at Tk.100 instead of at Tk.60

Income of Division A is Tk.40 higher:

Therefore, A pays 25% of Tk.40 more income tax. Tk.(10.00)

Income of Division B is Tk.40 lower:

Therefore B pay 50% of Tk.40 less income tax. Tk.20.00

Import duty of Division is 20% of Tk.40 = Tk.8 higher Tk.(8.00)

Net savings from transferring at Tk.100 instead of Tk.60 Tk.2.00

Example # 4

Suppose that Division A buys a product from Division B. The divisions are in different countries. The tax rate in Division A’s country is 20% and Division B’s country 60%. Both use the same currency to prepare income statement. Some data about the two divisions are as follows:

Division A:

Selling price of division A’s product	Tk.100
Variable cost, excluding transfer price	Tk.20
Tax rate	20%

Division B:

Variable cost of Division B's product	Tk.30
Tax rate	60%

Assume, Division B transfers 1000 units to Division A at Tk.30 and Tk.60.

Solution:

Transfer at Tk.60 instead of Tk.30:

Tax of Division B will go up:

$$60\% \text{ of } (\text{Tk.}60 - \text{Tk.}30) = \text{Tk.}(18.00)$$

Tax of Division A will go down:

$$20\% \text{ of } (\text{Tk.}60 - \text{Tk.}30) = \underline{6.00}$$

$$\text{Total tax burden will go up by (per unit)} \quad \underline{\underline{\text{Tk.}(12.00)}}$$

It is better to transfer at Tk.30 per unit.

Lesson-4: IAS Relating to Segment Reporting

Segment reporting is an issue of concern of internal management in a divisionalized organization. Management in a divisionalized firm has to compare the performance of various autonomous divisions. But the objectives of segment reporting under IAS # 14 of the IASC are somewhat different. This standard has been designed for external reporting. The requirement of this standard may not be necessary for internal management. Still, it is better to have some knowledge of the standard.

After completing this lesson, you are expected to be able to:

- To explain the objective of designing this standard;
- To explain various concepts used in this standard;
- To explain the requirements of this standard; and
- To give a format of external segment reporting.

Reporting Financial Information by Segment

Traditionally, business is operated in a single industry segment or within a very small number of such groupings. During that time it was not difficult to understand and use financial statements. But during mid-to late 60s, the trend toward conglomerates became noticeable. Even in Bangladesh, now we have different groups of industries. Different types of businesses are assembled under one management. Naturally, shareholders will be interested to know the performance of each unit under the group management.

The International Accounting Standard Committee first issued IAS # 14 (Reporting Financial Information by Segment) in March, 1981. Subsequently, the IASC significantly revised this standard in 1997. This standard became effective after July 1, 1998.

Objective of the Standard

The objective of presenting information by segment is to provide users of financial statements with information on the relative (i) size, (ii) profit contribution and (iii) growth trend of different industries and different geographical areas in which diversified enterprise operates to enable them to make more informed judgments about the enterprise as a whole. These data are needed to measure the risk of investing in such firms.

Scope of This Standard

This standard will be applicable to:

- (a) Enterprises engaged in different industries in different geographical areas;
- (b) Enterprises whose securities are publicly traded.

Terms used in this Standard

Industry Segments:

Industry segments are the distinguishable components of an enterprise each engaged in providing a different product or service, or a different

group of related products or services, primarily to customers outside the enterprise.

Geographical Segments:

Geographical segments are the distinguishable components of an enterprise engaged in operations in individual countries or group of countries within particular geographical areas as may be determined to be appropriate in an enterprise's particular circumstances.

Segment Revenue:

Segment revenue is revenue that is directly attributable to a segment, or the relevant portion of revenue that can be allocated on a reasonable basis to a segment and that is derived from transactions with parties outside the enterprise and from other segments of the same enterprise.

Segment Expense:

Segment expense is expense that is directly attributable to a segment or the relevant portion of an expense that can be allocated on a reasonable basis to the segments.

Segment Assets:

Segment assets are the resources employed in generating segment operating results. Such assets include all tangible and intangible assets that can be identified with a particular segment. Assets shared by two or more segments may be allocated between or among those segments on a reasonable basis if available.

Inter-segment Pricing:

Inter-segment sales and other operating inter-segment revenues cannot always be determined on an arm's length basis. For this reason disclosure of the amount of such revenues and an explanation of the inter-segment pricing basis (such as "fair market value", cost, or market price less a discount) is useful.

Information Reported:

For each reported industry and geographical segment, the following financial information should be disclosed:

- (i) Sales or other operating revenues, distinguishing between revenue derived from customers outside the enterprise and revenue derived from other segments;
- (ii) Segment results;
- (iii) Segment assets employed, expressed either in money amounts or as percentages of the consolidated totals; and
- (iv) the basis of inter-segment pricing.

Segment Result:

The measure of the profitability of a segment is disclosed as the segment result. The segment result is the difference between segment revenue and segment expense and generally reflects operating profit. Where revenues and expenses are not directly attributable to a segment but a reasonable basis for allocation exists, they may be allocated there to on that basis.

Example # 1

Comprehensive example of segment reporting under revised IAS 14

To illustrate the expansion of reporting requirements under the new standard, revised IAS 14, a comprehensive illustration is given below. The facts assumed are as follows as these would have been presented in conformity with the original IAS 14:

(All amount in Tk. millions)

	<i>Electronic components</i>	<i>Mechanical components</i>
Net sales		
2005	345.0	228.6
2006	378.5	219.8
Operating profit		
2005	29.6	13.2
2006	36.0	8.5
Capital expenditures		
2005	12.1	3.5
2006	21.4	2.5
Identifiable assets		
2005	122.9	128.4
2006	140.2	118.5
Depreciation and amortization		
1999	13.7	15.9
2000	17.5	13.6

Unallocated (corporate) assets totaled Tk.7.6 million in 2005 and Tk.8.1 million in 2006. Unallocated corporate expenses equaled Tk.3.4 million in 2005 and Tk.4.5 million in 2006. Intersegment sales, which are made at cost, are not material in amount. Operating profit by segment is defined as third-party sales less operating expenses; corporate overhead and financing cost are excluded from segment expenses.

Revenue by geographic area is summarized below:

(All amount in Tk. millions)

	<i>Western Europe</i>	<i>Eastern Europe</i>	<i>Middle East</i>
Net sales			
2005	348.8	113.4	111.7
2006	366.3	133.4	98.6
Operating profit			
2005	22.7	8.6	11.5
2006	20.6	13.9	10.0

Identifiable assets

2005	178.4	63.2	9.7
2006	183.3	69.5	5.9

Western Europe includes primarily Germany and France, with a relatively small amount of activity in Belgium and the Netherlands. Eastern Europe includes Hungary, Poland, Slovakia and the Czech Republic. The Middle East is principally Lebanon and Syria, with a small level of activity in Egypt and Saudi Arabia. Sales in the Middle East are made almost entirely to after-market suppliers, whereas revenues derived from European markets are predominantly from original equipment manufacturers of automobiles and construction equipment. Approximately 12% and 14% of sales in Western Europe, for 2005 and 2006, respectively, were made to after-market suppliers, for Eastern European sales, the corresponding percentages were 19% and 23% for 2005 and 2006, respectively.

It is assumed that management has determined that the primary reporting format should be by business segment; the secondary reporting format, therefore, will be geographical segment. What follows is the set of required disclosures to conform with revised IAS 14:

Note: Segment information

Management has determined that the primary determinant of its decision making is the major products offered by the company, with lesser attention being based on geographical location of its customers. Accordingly, the primary disclosures, below, are based on business segment, alternatively, electronic or mechanical components, with the following secondary disclosures based on geographic location of customers.

	<i>(All amounts in Tk. millions)</i>	
	<i>Electronic components</i>	<i>Mechanical components</i>
Net sales		
2005-In total	345.0	228.6
2005-To external customers	336.3	228.6
2005-Intersegment sales	8.7	0.0
2006-In total	378.5	219.8
2006-To external customers	371.0	219.5
2006-Intersegment sales	7.5	.3
Operating profit		
2005	29.6	13.2
2006	36.0	8.5
Interest and dividend income		
2005-Interest income	1.2	.2
2005-Dividend income	.1	0

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2006-Interest income	1.1	.3
2006-Dividend income	0	0
Interest expense		
2005	1.5	1.1
2006	1.2	1.0
Identifiable assets, at net carrying amounts		
2005	122.9	128.4
2006	140.2	118.5
Segment liabilities		
2005	62.3	43.4
2006	59.6	40.1
Contingent liabilities related to contractual disputes		
2005	2.5	1.0
2006	4.4	1.2
Capital expenditures		
2005	12.1	3.5
2006	21.4	2.5
Depreciation and amortization		
2005	13.7	15.9
2006	17.5	13.6
Nonrecurring items		
2005-Revenue from government contract	6.7	0
2006-Gain from settlement of patent suit	2.3	0
Equity in income of investee		
2005	2.2	0
2006	.5	0
Investment in equity method investee		
2005	5.6	0
2006	6.9	0

Segment information is reconciled to corresponding enterprise totals in the following section:

Net sales

2005	To external customers	
	Electronic components	336.3
	Mechanical components	<u>228.6</u>
	Enterprise total sales	<u>564.9</u>
2006	To external customers	
	Electronic components	371.0
	Mechanical components	<u>219.5</u>
	Enterprise total sales	<u>590.5</u>

Operating profit

2005	
Electronic components	29.6
Mechanical components	13.2
Less: Unallocated corporate expenses	<u>(3.4)</u>
Enterprise total operating profit	<u>39.4</u>

2006	
Electronic components	36.0
Mechanical components	8.5
Less: Unallocated corporate expenses	<u>(4.5)</u>
Enterprise total operating profit	<u>40.0</u>

Identifiable assets, at net carrying amounts

2005	
Electronic components	122.9
Mechanical components	128.4
Unallocated corporate assets	<u>7.6</u>
Enterprise total assets	<u>258.9</u>

2006	
Electronic components	140.2
Mechanical components	118.5
Unallocated corporate e assets	<u>8.1</u>
Enterprise total assets	<u>266.8</u>

Segment liabilities

2005	
Electronic components	62.3
Mechanical components	<u>43.4</u>
Enterprise total liabilities	<u>105.7</u>

2006	
Electronic components	59.6
Mechanical components	<u>40.1</u>
Enterprise total liabilities	<u>99.7</u>

Revenue by geographic area is summarized below (based on location of customers.)

(All amounts in Tk. millions)

	<u>Western Europe</u>	<u>Eastern Europe</u>	<u>Middle East</u>
Net sales			
2005	348.8	113.4	111.7
2006	366.3	133.4	98.6

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Identifiable assets

2005	178.4	63.2	9.7
2006	183.3	69.5	5.9

Capital expenditures

2005	8.2	4.4	3.0
2006	12.5	5.5	5.9

Western Europe includes primarily Germany and France, with a relatively small amount of activity in Belgium and the Netherlands. Eastern Europe includes Hungary, Poland, Slovakia and the Czech Republic. The Middle East is principally Lebanon and Syria, with a small level of activity in Egypt and Saudi Arabia. Sales in the Middle East are made almost entirely to after-market suppliers, whereas revenues derived from European markets are predominantly from original equipment manufacturers of automobiles and construction equipment. Approximately 12% and 14% of sales in Western Europe, for 2005 and 2006, respectively, were made to after-market suppliers, for Eastern European sales, the corresponding percentages were 19% and 23% for 2005 and 2006, respectively.

Self Assessment Questions

(A) True or False

1. Indicate which statement is true and which statement is false by using “T” and “F” respectively.

- (i) Power is a much broader term than authority.
- (ii) Authority is the power possessed by an individual for making decisions and carrying them out.
- (iii) An accountant is a line authority.
- (iv) A staff has the authority to take decision.
- (v) Scalar principle tells that the clearer the line authority, the clearer will be the responsibility and the more effective will be communication.
- (vi) Decentralization is the goal whereas delegation is the means.
- (vii) Decentralization is nothing but one form of divisionalization.
- (viii) Cross-subsidization is the result of improperly assignment of joint costs among products.
- (ix) Contribution margin is always equal segment margin.
- (x) Multi-national transfer-pricing is not a clash of interest between a subsidiary and its parent company.

(B) Multiple Choice

2. Select the correct answer for the following multiple choice questions:

- (i) Which approach to transfer pricing uses the price at which the product or service transferred could be sold to outside buyers?
 - (a) Cost price approach
 - (b) Negotiated approach
 - (c) Market price approach
 - (d) None of the above.

- (ii) Which of the following statements regarding transfer pricing is false?
 - (a) When idle capacity exists, there is no opportunity cost to producing intermediate products for another division.
 - (b) Market-based transfer prices should be reduced by any costs avoided by selling internally rather than externally.
 - (c) No contribution margin is generated by the transferring division when variable cost-based transfer prices are used.
 - (d) The goal of transfer pricing is to provide segment managers with incentive to maximize the profits of their divisions.

- (iii) In theory, the optimal method for establishing a transfer price is
 - (a) Flexible budget costs
 - (b) Incremental cost
 - (c) Market price
 - (d) Budgeted cost with or without a markup
 - (e) Actual cost with or without a markup.

- (iv) Transfer pricing should encourage goal congruence and managerial effort. In a decentralized organization, it should also encourage autonomous decision making. Managerial effort is -
 - (a) The desire and the commitment to achieve a specific goal
 - (b) The sharing of goals by supervisors and subordinates
 - (c) The extent to which individuals have the authority to make decisions.
 - (d) The extent of the attempt to accomplish a specific goal.

- (v) A limitation of transfer prices based on actual cost is that they
 - (a) Charge inefficiencies to the departments that is transferring the goods.
 - (b) Can lead to sub optimal decisions for the company as a whole.
 - (c) Must be adjusted by some markup.
 - (d) Lack clarity and administrative convenience.

- (vi) Which is not the limitation of decentralization?
 - (a) It makes it more difficult to have uniform policy.
 - (b) It may result in loss of some control by upper-level managers.
 - (c) It facilitates product diversification.
 - (d) It may be limited by inadequate control techniques.

- (vii) Which one is not the advantage of decentralization?
 - (a) It encourages decision making and assumption of authority and responsibility.
 - (b) It promotes development of general managers.
 - (c) It involves considerable amount of expenses for training managers.
 - (d) It aids in adoption to fast changing environment.

- (viii) Which of the following does not support centralization?
 - (a) Specialized skills, talents, and technology are sometimes neither affordable nor practical in multiple locations.
 - (b) Coordination of products, money and control also add to the cost.
 - (c) Recent improvements in communication technology facilitate the movement of money, credit information, transportation and data processing.
 - (d) There is a need of environment which gives manages more freedom and independence in decision making.

- (ix) Which benefit cannot be achieved by delegation?
- (a) It can speed up decision making.
 - (b) It causes employees to accept accountability and exercise judgment.
 - (c) It frequently leads to better decisions because employees, closest to where the action is, are likely to have a clearer view of the fact.
 - (d) The more tasks managers are able to delegate, the lesser responsibilities they have to seek.
- (x) Which situation is not feasible?
- (a) No sales during product development stage.
 - (b) Sales growth during product introduction stage.
 - (c) Sales decrease during mature stage.
 - (d) Low sales to no-sales during phase-out stage.

(C) Short Questions:

1. Differentiate between.
 - (a) Power and Authority.
 - (b) Centralization and Decentralization
 - (c) Decentralization and Divisionalization
 - (d) Delegation and Decentralization
 - (e) Staff authority and Line authority.
2. What is decentralization? What are its advantages and disadvantages?
3. What is delegation of authority? Discuss its advantages.
4. Differentiate between “Divisional Organizations” and “Functional Organizations”, What are the reasons for divisionalization?
5. What is segment? What is segment reporting? Discuss two approaches of segment reporting.
6. What is transfer pricing? Explain the impact of transfer price on sending department and receiving department.
7. What are the various problems created by transfer prices? What are the various types of transfer prices?
8. What is negotiated transfer price? What are its advantages and disadvantages?
9. What are the contents of IAS 14? Do you think that a management accountant should be concerned about the contents?
10. What does segment margin mean?

Problems

1. The most recent monthly income statement for Reston Company is given below:

RESTON COMPANY
Income Statement
For the Month Ended May 31

Sales	Tk.900,000	100.0%
Less variable expenses	<u>408,000</u>	<u>45.3</u>
Contribution margin	492,000	54.7
Less fixed expenses	<u>465,000</u>	<u>51.7</u>
Net operating income	<u>Tk.27,000</u>	<u>3.0%</u>

Management is disappointed with the company's performance and is wondering what can be done to improve profits. By examining sales and cost records, you have determined the following:

- (a) The company is divided into two sales territories-Central and Eastern. The Central Territory recorded Tk.400,000 in sales and Tk.208,000 in variable expenses during May. The remaining sales and variable expenses were recorded in the eastern Territory. Fixed expenses of Tk.160,000 and Tk.130,000 are traceable to the Central and Eastern Territories, respectively. The rest of the fixed expenses are common to the two territories.
- (b) The company sells two products- Awls and Pows, Sales of Awls and Pows totaled Tk.100,000 and Tk.300,000, respectively, in the Central territory during May. Variable expenses are 25% of the selling price for Awls and 61% for Pows. Cost records show that Tk.60,000 of the Central Territory's fixed expenses are traceable to Awls and Tk.54,000 to Pows, with the remainder common to the two products.

Required:

- (i) Prepare segmented income statements, first showing the total company broken down between sales territories and then showing the Central Territory broken down by product line. Show both Amount and Percent columns for the company in total and for each segment. Round percentage computations to one decimal place.
- (ii) Look at the statement you have prepared showing the total company segmented by sales territory. What points revealed by this statement should be brought to the attention of management?
- (iii) Look at the statement you have prepared showing the Central Territory segmented by product lines. What points revealed by this statement should be brought to the attention of management?

2. Vega Foods, Inc., has recently purchased a small mill that it intends to operate as one of its subsidiaries. The newly acquired mill has three products that it offers for sale-wheat cereal, pancake mix. and flour. Each product sells for Tk.10 per package. Materials, labor and other variable production costs are Tk.3.00 per bag of wheat cereal Tk.4.20 per bag of pancake mix. and Tk.1.80 per bag of flour. Sales commissions are 10% of sales for any product. All other costs are fixed.

The mill's income statement for the most recent month is given below:

	Product Line				
	Total Company		Wheat Cereal	Pancake Mix	Flour
Sales	<u>Tk.600,000</u>	<u>100.0%</u>	<u>Tk.200,000</u>	<u>Tk.300,000</u>	<u>Tk.100,000</u>
Less expenses					
Materials, labor, and other	204,000	34.0	60,000	126,000	18,000
Sales commissions	60,000	10.0	20,000	30,000	10,000
Advertising	123,000	20.5	48,000	60,000	15,000
Salaries	66,000	11.0	34,000	21,000	11,000
Equipment depreciation	30,000	5.0	10,000	15,000	5,000
Warehouse rent	12,000	2.0	4,000	6,000	2,000
General administration	<u>90,000</u>	<u>15.0</u>	<u>30,000</u>	<u>30,000</u>	<u>30,000</u>
Total expenses	<u>585,000</u>	<u>97.5</u>	<u>206,000</u>	<u>288,000</u>	<u>91,000</u>
Net operating income (loss)	<u>Tk.15,000</u>	<u>2.5%</u>	<u>Tk.(6,000)</u>	<u>Tk.12,000</u>	<u>Tk.9,000</u>

The following additional information is available about the company:

- The same equipment is used to mill and package all three products. In the above income statement, equipment depreciation has been allocated on the basis of sales dollars. An analysis of the use of the equipment indicates that it is used 40% of the time to make wheat cereal, 50% of the time to make pancake mix, and 10% of the time to make flour.
- All three products are stored in the same warehouse. In the above income statement, the warehouse rent has been allocated on the basis of sales Taka. The warehouse contains 24,000 square feet of space, of which 8,000 square feet are used for wheat cereal, 14,000 square feet are used for pancake mix, and 2,000 square feet are used for flour. The warehouse space costs the company Tk.0.50 per square foot to rent.
- The general administration costs relate to the administration of the company as a whole. In the above income statement, these costs have been divided equally among the three product lines.
- All other costs are traceable to the product lines.

Vega Foods management is anxious to improve the mill's 2.5% margin on sales.

Required:

- (i) Prepare a new segmented income statement for the month, using the contribution approach. Show both Amount and Percent columns for the company as a whole and for each product line. Adjust the allocation of equipment depreciation and warehouse rent as indicated by the additional information provided.
 - (ii) After seeing the income statement in the main body of the problem, management has decided to eliminate the wheat cereal, since it is not returning a profit, and to focus all available resources on promoting the pancake mix.
 - (a) Based on the statement you have prepared, do you agree with the decision to eliminate the wheat cereal? Explain.
 - (b) Based on the statement you have prepared, do you agree with the decision to focus all available resources on promoting the pancake mix? Explain (You may assume that an ample market is available for all three products)
 - (iii) What additional points would you bring to the attention of management that might help to improve profits?
3. Brabant NV is a wholesale distributor of Dutch cheeses that it sells throughout the country. Unfortunately, the company's profits have been declining, which has caused considerable concern. To help understand the condition of the company, the managing director of the company has requested that the monthly income statement be segmented by sales territory. Accordingly, the company's accounting department has prepared the following statement for March, the most recent month.

	Sales Territory		
	Dhaka	Rajshahi	Chittagong
Sales	Tk.300,000	Tk.800,000	Tk.700,000
Less territorial expenses (traceable):			
Cost of goods sold	93,000	240,000	315,000
Salaries	54,000	56,000	112,000
Insurance	9,000	16,000	14,000
Advertising	105,000	240,000	245,000
Depreciation	21,000	32,000	28,000
Shipping	<u>15,000</u>	<u>32,000</u>	<u>42,000</u>
Total territorial expenses	<u>297,000</u>	<u>616,000</u>	<u>756,000</u>
Territorial income (loss) before corporate expenses	<u>3,000</u>	<u>184,000</u>	<u>(56,000)</u>
Less corporate expenses:			
Advertising (general)	15,000	40,000	35,000
General administrative	<u>20,000</u>	<u>20,000</u>	<u>20,000</u>

Total corporate expenses	35,000	60,000	55,000
Net operating income (loss)	<u>(Tk.32,000)</u>	<u>(Tk.124,000)</u>	<u>Tk.(111,000)</u>

Cost of goods sold and shipping expenses are both variable; other costs are all fixed. Brabant NV purchases cheeses at auction and from farmers' cooperatives and it distributes them in the three territories listed above. Each of the three sales territories has its own manager and sales staff. The cheeses vary widely in profitability; some have a high margin and some have a low margin. (Certain cheese, after having been aged for long periods, are the most expensive and carry the highest margins).

Required:

- (i) List any disadvantages or weaknesses that you see to the statement format illustrated above.
- (ii) Explain the basis that is apparently being used to allocate the corporate expenses to the territories. Do you agree with these allocations? Explain.
- (iii) Prepare a new segmented income statement for May using the contribution approach. Show a Total column as well as data for each territory. Include percentages on your statement for all columns. Carry percentages to one decimal place.
- (iv) Analyze the statement that you prepared in (3) above. What points that might help to improve the company's performance would you be particularly anxious to bring to the attention of management?

4. Padma Group, is organized into two divisions. The company's segmented for last month is given below:

	Total Company	Divisions	
		Cloth	Leather
Sales	Tk.3,500,000	Tk.2,000,000	Tk.1,500,000
Less variable expenses	<u>1,721,000</u>	<u>960,000</u>	<u>761,000</u>
Contribution margin	<u>1,779,000</u>	<u>1,040,000</u>	<u>739,000</u>
Less traceable fixed expenses:			
Advertising	612,000	300,000	312,000
Administration	427,000	210,000	217,000
Depreciation	<u>229,000</u>	<u>115,000</u>	<u>114,000</u>
Total traceable fixed expenses	<u>1,268,000</u>	<u>625,000</u>	<u>643,000</u>
Divisional segment margin	511,000	<u>Tk.415,000</u>	<u>Tk.96,000</u>
Less common fixed expenses	<u>390,000</u>		
Net operating income	<u>Tk.121,000</u>		

Top management can't understand why the Leather Division has such a low segment margin when its sales are only 25% less than sales in the

Cloth Division. As one step in isolating the problem, management has directed that the Leather Division be further segmented into product lines. The following information is available on the product lines in the Leather Division:

	Leather Division Product Lines		
	Garments	Shoes	Handbags
Sales	Tk.500,000	Tk.700,000	Tk.300,000
Traceable fixed expenses:			
Advertising	80,000	112,000	120,000
Administration	30,000	35,000	42,000
Depreciation	25,000	56,000	33,000
Variable expenses as a percentage of sales	65%	40%	52%

Analysis shows that Tk.110,000 of the Leather Division's administration expenses are common to the product lines.

Required:

- (i) Prepare a segmented income statement for the Leather Division with segments defined as product lines. Use the contribution approach. Show both Amount and Percent columns for the division in total and for each product line. Carry percentage figures to one decimal place.
- (ii) Management is surprised by the handbag product line's poor showing and would like to have the product line segmented by market. The following information is available about the markets in which the handbag line is sold:

	Handbag Markets	
	Domestic	Foreign
Sales	Tk.200,000	Tk.100,000
Traceable fixed expenses:		
Advertising	40,000	80,000
Variable expenses as a percentage of sales	43%	70%

All of handbag product line's administration expenses and depreciation are common to the markets in which the product is sold. Prepare a segmented income statement for the handbag product line with segments defined as markets. Again use the contribution approach and show both Amount and Percent columns.

- (iii) Refer to the statement prepared in (i) above. The sales manager wants to run a special promotional campaign on one of the product lines over the next month. A marketing study indicates that such a campaign would increase sales of the garment product line by Tk.200,000 or sales of the shoes product line by Tk.145,000. The campaign would cost Tk.30,000. Show computations to determine which product line should be chosen.

5. “Rats! We’re still in the red.” said Jana Andrews, executive vice president of the Ashland Company. “I know,” said Steve Clark, the controller, “Just look at this income statement for March. We’ve got to forget about Districts A and B and focus on District C.” The statement to which Mr. Clark was referring is shown below:

	Total	Districts		
	Company	A	B	C
Sales @ Tk.20 per unit	Tk.1,000,000	Tk.300,000	Tk.500,000	Tk.200,000
Less cost of goods sold @ Tk.9 per unit	<u>450,000</u>	<u>135,000</u>	<u>225,000</u>	<u>90,000</u>
Gross margin	<u>550,000</u>	<u>165,000</u>	<u>275,000</u>	<u>110,000</u>
Less operating expenses:				
Marketing expenses:				
Shipping	51,250	11,250	25,000	15,000
Warehouse rent	80,000	24,000	40,000	16,000
Sales commissions	60,000	18,000	30,000	12,000
Sales salaries	30,000	12,000	10,000	8,000
District advertising	75,000	20,000	25,000	30,000
National advertising*	<u>115,000</u>	<u>34,500</u>	<u>57,500</u>	<u>23,000</u>
Total marketing expenses	411,250	119,750	187,500	104,000
Administrative expenses:				
District management salaries	40,000	12,000	15,000	13,000
Central office administrative expenses*	<u>100,000</u>	<u>30,000</u>	<u>50,000</u>	<u>20,000</u>
Total administrative expenses	<u>140,000</u>	<u>42,000</u>	<u>65,000</u>	<u>33,000</u>
Total operating expenses	<u>551,250</u>	<u>161,750</u>	<u>252,500</u>	<u>137,000</u>
Net operating income (loss)	<u>Tk.(1,250)</u>	<u>Tk.3,250</u>	<u>Tk.22,500</u>	<u>Tk.(27,000)</u>

* Allocated on the basis of sales Taka.

The company is a retail organization that sells a single product. The product is sold in three districts, as shown above. Additional information on the company follows:

- (a) The sales and administrative offices are centrally located being about the same distance from each district.
- (b) Each district specifies on the sales order what shipping method is to be used (by truck, rail, or air). All goods are shipped from a central warehouse. Shipping is a variable cost, and it is traceable to the districts; differences in amounts above are reflective of the difference shipping methods used.
- (c) All salespersons are paid a base salary of Tk.2,000 per month, plus a commission of 6% of sales. There are 6 salespersons in District A, 5 in District B, and 4 in District C.
- (d) Each district manager must arrange his or her own district’s advertising program. The national advertising is provided by the central office.

- (e) The variable costs of processing orders, which have been included in the “Central office administrative expenses” above, amount to Tk.25,000. During March, District A had 3,000 orders. District B had 1,500 orders, and District C had 500 orders. The remainder of the “Central office administrative expenses” are fixed and relate to general administrative assistance provided to all parts of the organization.
- (f) The warehouse contains 160,000 square feet of storage space. District A uses 60,000 square feet, District B uses 80,000 square feet, and District C uses 20,000 square feet.

Required:

- (i) Garth Hansen, the president, has asked that the company’s income statement be redone using the contribution format, which he heard about at a recent industry convention. Prepare the income statement as requested by Mr. Hansen. Show both an Amount and a Percent column for the company in total and for each district, (carry computations to one decimal place.)
 - (ii) Compute the contribution margin per order for each district. What problems does this computation suggest?
 - (iii) The manager of District B would like to spend an extra Tk.25,000 next month in a special promotional campaign. If sales increase by Tk.100,000 as a result, would the expenditure be justified? No additional warehouse space would be required.
 - (iv) Analyze the data in the statement you prepared in (i) above. What points should be brought to the attention of management?
6. Benson Company makes bicycles. Components are made in various divisions and transferred to the Omaha Division for assemble into final products. The Omaha Division can also buy components from external suppliers. The wheels are made in the Lincon Division which also sells wheels to external customers. All divisions are profit center and managers are free to negotiate transfer pries. Prices and costs for the Lincon and Omaha division are:

Lincon Division

Sales price to external customers :	1200
Internal transfer price	?
Costs:	
Variable costs per wheel	800
Total fixed costs	32,000,000
Budgeted production	64,000 wheels

Omaha Division

Sales price to external customers:	16,000
------------------------------------	--------

Costs:

Wheels per cycle	?
Other components, per bicycle	8,000
Total fixed costs	64,000,000
Budgeted production	16,000 bicycles

Fixed costs in both divisions will be unaffected by the transfer of wheels from Lincon to Omaha.

Required:

- (i) Computer the maximum price per wheel the Omaha Division would be willing to pay to buy wheels from the Lincon Division.
- (ii) Computer the maximum transfer price per wheel at which the Lincon Division would be willing to produce and sell wheels to the Omaha Division. Assume that Lincon has excess capacity.

7. Globe Enterprise Inc. has production and marketing divisions throughout the world. One particular product is produced in Japan, where the income tax rate is 30% and transferred to a marketing division in Sweden, where the income tax rate is 60%, Assume that Sweden places an income tax of 10% on the product and that import duties are not tax deductible for income tax purposes.

The variable cost of the product is Tk.200 and the full cost is Tk.400. Suppose the company can select a transfer price any where the variable and full cost.

- (a) What transfer price should Global Enterprise use to minimize taxes? Explain why this is the tax-minimizing transfer price.
- (b) Compute the amount of taxes saved by using the transfer price in requirement (a) instead of the transfer price that would result in the highest taxes.

8. The Grand Rapid Division of National Woodcrest purchases lumber, which it uses to fabricate tables, chair and other wood furniture. Most of the lumber is purchased from Northwood's Mill, also a division of National Woodcraft. Both the 'Grand Rapids Division and Northwood Mill are profit centers.

The Grand Rapids Division proposes to produce a new shaker-style chair that will sell for Tk.9200. The manager is exploring the possibility of purchasing the required lumber from Northeroods Mill. Production of 800 chairs is planned using capacity in the Grand Rapids Division that is currently idle.

The Grand Rapids Division can purchase the lumber from an outside supplier for Tk.7200. National Woodcraft has a policy that internal transfers are priced at finally allocated cost.

Assume the following costs for the production of one chair and the lumber required for the chair:

Northwoods Mill	Grand Rapids Division
Variable Cost: Tk.4,800	Variable Cost:
Allocated fixed costs: <u>2,200</u>	Lumber from
Fully allocated cost: <u>Tk.7,000</u>	Northwoods Mill Tk.7000
	Grand Rapids
	Division Variable cost
	Manufacturing Tk.2100
	Selling <u>600</u> <u>2700</u>
	Total variable cost: Tk.9700

Required:

- (i) Assume that the Northwoods Mill has idle capacity and therefore would incur no additional fixed costs to produce the required lumber. Would the Grand Rapids division manager buy the lumber for the chair from the Northwoods Mill, given the existing transfer-pricing policy? Why or why not? Would the company as a whole benefit if the manager decides to buy from the Northwoods Mill? Explain.
- (ii) Assume that there is no idle capacity at the Northwoods Mill and the lumber required for one chair can be sold to outside customer for Tk.7200. Would the company as a whole benefit if the manager decides to buy? Explain.

9. Malone’s Medical Instruments, Inc. produces a variety of medical products at its plant in Seattle. The company has sales divisions worldwide. One of their sales divisions is located in Oslo, Norway. Assume that the U.S. income tax rate is 34%, the Norwegian rate is 60% and a 15% import duty is imposed on medical supplies brought into Norway.

One product produced in Seattle and shipped to Norway is a heart monitor. The variable cost of production is Tk.30,000 per unit and the fully allocated cost is Tk.55,000 per unit.

Required:

- (i) Suppose the Norwegian and U.S. governments allow either the variable cost or fully-allocated costs to be used as a transfer price. Which price should Malone’s Medical Instruments choose to minimize the total of income taxes and import duties? Compute the amount the company saves if it uses your suggested transfer price instead of the alternative. Assume import duties are not deductible for tax purposes.

- (ii) Suppose the Norwegian parliament passed a law decreasing the income tax rate to 50% and increasing the duty on heart monitors to 20%. Repeat the requirement (i) using these new facts.

10. Pella Company has several independent divisions. The company's Compressor Division produces a high-quality compressor that is sold to various users. The division's income statement for the most recent month, in which 500 compressors were sold, is given below:

	Total	Unit
Sales	Tk.12,500,000	Tk.25,000
Less cost of goods sold	<u>7,500,000</u>	<u>15,000</u>
Gross margin	5,000,000	10,000
Less selling and administrative expenses	<u>3,000,000</u>	<u>6,000</u>
Divisional net operating income	<u>Tk.2,000,000</u>	<u>Tk.4,000</u>

As shown above, it costs the division Tk.15,000 to produce a compressor. This figure consists of the following costs:

Direct materials	Tk.5,000
Direct labour	6,000
Manufacturing overhead (50% fixed)	<u>4,000</u>
Total cost	<u>Tk.15,000</u>

The division has fixed selling and administrative expenses of Tk.2,500,000 per month and variable selling and administrative expenses of Tk.1,000 per compressor.

Another division of Pella Company, the Home Products Division uses compressors as a component part of air-conditioning systems that it installs. The Home Products Division asked the Compressor Division to sell it 40 compressors each month of a somewhat different design. The Compressor Division has estimated the following cost for each of the new compressors:

Direct materials	Tk.6,000
Direct labour	9,000
Manufacturing overhead (two-thirds fixed)	<u>7,500</u>
Total cost	<u>Tk.22,500</u>

In order to produce the new compressors, the Compressor Division would have to reduce production of its present compressors by 100 units per month. However all variable selling and administrative expenses could be avoided on the intracompany business. Total fixed overhead costs would not change. Assume direct labor is a variable cost.

Required:

- (i) Determine the lowest acceptable transfer price from the perspective of the Compressor Division for the new compressor.
- (ii) Suppose the Home Products Division has found an outside supplier that will provide the new compressors for only Tk.35,000 each. If the Compressor Division meets this price what will be the effect on the profits of the company as a whole?

11. Damico Company's Board Division manufactures an electronic control board that is widely used in high-end DVD players. The cost per control board is as follows:

Variable cost per board	Tk.1,200
Fixed cost per board	<u>300*</u>
Total cost per board	<u>Tk.1,500</u>

* Based on a capacity of 800,000 boards per year.

Part of the Board Division's output is sold to outside manufacturers of DVD players and part is sold to Damico Company's Consumer products Division which produces a DVD player under the Damico name. The Board Division charges a selling price of Tk.1,900 per control board for all sales both internally and externally.

The costs revenue and net operating income associated with the Consumer Products Division's DVD player are given below:

Selling price per player	Tk.5,800
Less variable costs per player:	
Cost of the control board	Tk.1,900
Variable cost of other parts	<u>2,300</u>
Total variable costs	<u>4,200</u>
Contribution margin	1,600
Less fixed costs per player	<u>850*</u>
Net operating income per player	<u>Tk. 750</u>

* Based on a capacity of 200,000 DVD players per year.

The Consumer Products Division has an order from an overseas distributor for 5,000 DVD players. The distributor wants to pay only Tk.4,000 per DVD player.

Required:

- (i) Assume that the Consumer Products Division has enough idle capacity to fill the 5,000 unit order. Is the division likely to accept the Tk.4,000 price or to reject it? Explain.
- (ii) Assume that both the Board Division and the Consumer Products Division have idle capacity. Under these conditions, would

rejecting the Tk.4,000 price be an advantage to the company as a whole or would it result in the loss of potential profits? Show computations to support your answer.

- (iii) Assume that the Board Division is operating at capacity and could sell all of its control boards to outside manufacturers of DVD players. Assume, however that the Consumer products Division has enough idle capacity to fill to 5,000-unit order. Under these conditions compute the Taka advantage or disadvantage to the Consumer Products Division of accepting the order at the Tk.4,000 price.
- (iv) What conclusions do you draw concerning the use of market price as a transfer price in intracompany transactions?

12. Ideal Products, Inc. has just purchased a small company that specializes in the manufacture of electronic tuners that are used as a component part to TV sets. Ideal Products, Inc. is a decentralized company and it will treat the newly acquired company as an autonomous division with full profit responsibility. The new division called the Tuner Division has the following revenue and costs associated with each tuner that it manufactures and sells:

Selling price		Tk.2,000
Less expenses:		
Variable	Tk.1,100	
Fixed (based on a capacity of 100,000 tuners per year)	<u>6,00</u>	<u>1,700</u>
Net operating income		<u>Tk.300</u>

Ideal Products also has an Assembly Division that assembles TV sets. This division is currently purchasing 30,000 tuners per year from an overseas supplier at a cost of Tk.2000 per tuner less a 10% quantity discount. The president of Ideal Products is anxious to have the Assembly Division begin purchasing its tuners from the newly acquired Tuner Division in order to “keep the profits within the corporate family.”

Required:

For (i) through (ii) below assume that the Tuner Division can sell all of its output to outside TV manufacturers at the normal Tk.2,000 price.

- (i) Are the managers of the Tuner and Assembly Divisions likely to voluntarily agree to a transfer price for 30,000 tuners each year? Why or why not?
- (ii) If the Tuner Division meets the price that the Assembly Division is currently paying to its overseas supplier and sells 30,000 tuners to the assembly Division each year what will be the effect on the profits of the Tuner Division the Assembly Division and the company as a whole?

For (iii) through (vi) below assume that the Tuner Division is currently selling only 60,000 tuners each year to outside TV manufacturers at the stated Tk.2,000 price.

- (iii). Are the managers of the Tuner and Assembly Divisions likely to voluntarily agree to a transfer price for 30,000 tuners each year? Why or why not?
- (iv) Suppose that the Assembly Division's overseas supplier drops its price (net the quantity discount) to only Tk.1,600 per tuner. Should the Tuner Division meet this price? Explain. If the Tuner Division does not meet this price, what will be the effect on the profits of the company as a whole?
- (v) Refer to (iv) above. If the Tuner Division refuses to meet the Tk.1,600 price should the Assembly Division be required to purchase from the Tuner Division at a higher price for the good of the company as a whole? Explain.
- (vi) Refer to (vi) above. Assume that due to inflexible management policies the Assembly Division is required to purchase 30,000 tuners each year from the Tuner Division at Tk.2,000 per tuner. What will be the effect on the profits of the company as whole?

13. In case 1-3 below, assume the Division A has a product that can be sold either to Division B of the same company or to outside customers. The managers of both divisions are evaluated based on their own division's return on investment (ROI). The managers are free to decide if they will participate in any internal transfers. All transfer prices are negotiated. Treat each case independently.

	Case			
	1	2	3	4
Division A:				
Capacity in units	50,000	300,000	100,000	200,000
Number of units now being sold to outside customers	50,000	300,000	75,000	200,000
Selling price per unit on the outside market	Tk.10,000	Tk.4,000	Tk.6,000	Tk.4,500
Variable costs per unit	Tk.6,300	Tk.1,900	Tk.3,500	Tk.3,000
Fixed costs per unit (based on capacity)	Tk.2,500	Tk.800	Tk.1,700	Tk.600
Division B:				
Number of units needed annually	10,000	70,000	20,000	60,000
Purchase price now being paid to an outside supplier	Tk.9,200	Tk.3,900	Tk.6,000*	---

* Before any quantity discount.

Required:

- (i) Refer to case I above. A study has indicated that Division A can avoid Tk.500 per unit in variable costs on any sales to Division B.

Will the managers agree to a transfer and if so, within what range will the transfer price be? Explain.

- (ii) Refer to case 2 above. Assume that Division A can avoid Tk.400 per unit in variable costs on any sales to Division B.
 - (a) Would you expect any disagreement between the two divisional managers over what the transfer price should be? Explain.
 - (b) Assume that Division A offers to sell 70,000 units to Division B for Tk.3,800 per unit and that Division B refuses this price. What will be the loss in potential profits for the company as a whole?
- (iii) Refer to case 3 above Assume that Division B is now receiving a 5% quantity discount from the outside supplier.
 - (a) Will the managers agree to a transfer? If so, within what range will the transfer price be?
 - (b) Assume that Division B offers to purchase 20,000 units from Division A at Tk.5,200 per unit. If Division A accepts this price would you expect its ROI to increase decrease or remain unchanged? Why?
- (iv) Refer to case 4 above. Assume that Division B wants Division A to provide it with 60,000 units of a *different* product from the one that Division A is now producing. The new product would require Tk.2,500 per unit in variable costs and would required that Division A cut back production of its present product by 30,000 units annually. What is the lowest acceptable transfer price from Division A's perspective?

14. The Film Division of the Photo life, produces 35 mm film that can be sold externally or internally to photo life's school Photography Division. Sales and cost data per roll of 35 mm film follow:

Unit selling price	:	Tk.295
Unit variable costs	:	140
Unit product fixed cost	:	120
Practical capacity		5,00,000 units

[Unit product fixed costs has been calculated as follows:
 $Tk.60000000 \div 5,00,000 = Tk.120$]

During the coming year, the Film Division expects to sell 3,50,000 rolls of this film. The School Photography division currently plans to buy 1,50,000 rolls of the film on the outside market for Tk.295 each. Anita Mathur, manager of the Film Division, has approached Kazal, manager of the school photography division and offered to sell the 150,000 rolls for Tk..294 each. Anita explains to Kazal that she can avoid selling cost of Tk.2 per film roll and that she would split the savings by offering a Tk.1 discount on the usual price.

Required:

- (i) What is the minimum transfer price that the Film Division would be willing to accept? What is the maximum transfer price that the School Photography division would be willing to pay? Should an internal transfer take place? What would be the benefit or loss to the firm as a whole if the internal transfer takes place?
- (ii) Suppose Kajal knows that the Film Division has idle capacity. Do you think that she would agree to the transfer price of Tk.294. Suppose she counters with an offer of Tk.285. If you were Anita Mathur would you be interested in this price? Explain with supporting computations.
- (iii) Suppose that Photolife’s policy is that all internal transfers take place at full manufacturing cost. What would the transfer price be? Would the transfer take place?

15. Pfizer Industries is a vertically integrated firm with several divisions that operate as decentralized profit centers. Pfizer System Division manufactures scientific instruments and uses the products of two other divisions. The Board Division manufactures printed circuit boards (PCB). One PCB model is made exclusively for the Systems Division using proprietary designs, while less complex models are sold in outside markets. The products of the Transistor Division are sold in a well developed competitive market: however, one transistor model is used by the Systems Division. The cost per unit of the products used by the System Division follow:

	PCB	Transistor
	Taka	Taka
Direct Materials	2,500	800
Direct Labour	4,500	1,000
Variable overhead	2,000	500
Fixed overhead	800	750
Total Cost	9,800	3,050

The board division sells its commercial products at full cost plus a 25 percent markup and believes the proprietary board made for the System Division would sell for Tk.12,250 per unit on the open market. The market price of the transistor used by the System Division is Tk.3,700 per unit.

Required:

- (i) What is the minimum price for the Transistor Division? What is the maximum transfer price of the transistor for the System Division?

- (ii) Assume the Systems Division is able to purchase a large quantity of transistors from an outsource at Tk.2900 per unit. Further assume that the Transistor Division has excess capacity. Can the Transistor Division meet this price?
- (iii) The Board and Systems Divisions have negotiated a transfer price of Tk.11,000 per printed circuit board. Discuss the impact this price will have on each division.