

COST SHEET, PROFITABILITY ANALYSIS AND COMPARISON

BASIC CONCEPTS AND FORMULA

Basic Concepts

1. Cost Sheet

A Cost Sheet or Cost Statement is “a document which provides for the assembly of the detailed.

2. Cost of a Cost Centre

Cost of a Cost Centre or Cost Unit”. It is a detailed statement depicting the sub-division of cost arranged in a logical order under different heads.

3. Market driven standard costs

The allowable or target cost per unit is a market driven standard cost that has to be met if the desired profit are to be achieved.

4. Direct product profitability (DPP)

This is a new way of spreading overheads in retail organisations, which is used in the grocery trade in particular. DPP has become much more sophisticated and is now very similar to activity-based costing.

5. Categorisation of Indirect Costs for DPP

- i. Overhead cost
- ii. Volume related cost
- iii. Product batch cost
- iv. Inventory financing costs

6. Customer profitability analysis

This is a relatively new technique that ABC makes possible because it creates cost pools for activities. Customers use some activities but not all, and different groups of customers have different ‘activity profiles’. Different customers or

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categories of customers will each use different amounts of these activities and so customer profitability profiles can be built up, and customers can be charged according to the cost to serve them.

7. The Balanced Scorecard

The Balanced Scorecard can be defined as 'an approach to the provision of information to management to assist strategic policy formulation and achievement'. It emphasizes the need to provide the user with a set of information, which addresses all relevant areas of performance in an objective and unbiased fashion.

Question 1

"Costs may be classified in a variety of ways according to their nature and the information needs of the management" Explain.

Answer

Cost classification is the process of grouping costs according to their characteristics. Costs are classified or grouped according to their common characteristics. Costs may be classified according to elements, according to functions or operations, according to their behaviour, according to controllability or according to normality.

The break up of the aggregate costs into relevant types, is an essential pre-requisite of decision making as well as of controlling costs. Classification of costs on different bases is thus necessary for various purposes. For the purpose of decision-making and control, costs are distinguished on the basis of their relevance to different type of decisions and control functions. The importance of distinguishing cost as direct or indirect lies in the fact that direct costs of a product or an activity can be accurately allocated while indirect costs have to be apportioned on the basis of certain assumptions. This is so because direct costs are controllable at the operational level whereas indirect costs are not amenable to such control.

Question 2

A company produces and sells four types of dolls for children. It also produces and sells a set of dress kit for the dolls.

The company has worked out the following estimates for the next year:

Doll	Estimated Demand	Standard Material Cost (Rs.)	Standard Labour Cost Rs.	Estimated Sales Per Unit (Rs.)
A	50,000	20	15	60
B	40,000	25	15	80

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C	35,000	32	18	100
D	30,000	50	20	120
Dress Kit	2,00,000	15	5	50

To encourage the sale of dress kits, a discount of 20% in its price is offered if it were to be purchased along with the doll. It is expected that all the customer, buying dolls will also buy the dress kit.

The company's factory has effective capacity of 2,00,000 labour hours per annum on a single-shift basis and it produces all the products on that basis. The labour hour rate is Rs.15 Overtime of labour has to be paid at double the normal rate.

Variable cost works out to 50% of direct labour cost. Fixed costs are Rs.30 lakhs per annum.

There will be no inventory at the end of the year.

You are to draw a conservative estimate of the year's profitability.

Answer

Working notes:

- Total labour hours required to meet estimated demand of four types of dolls and their dress kit:

Doll	Estimated Demand (units)	*Std labour time per doll	Total labour hours
(a)	(b)	(c)	(d) = (b) × (c)
A	50,000	1 hr	50,000.00
B	40,000	1 hr	40,000.00
C	35,000	1.2 hrs	42,000.00
D	30,000	1.33 hrs	40,000.00
Dress Kit	2,00,000	0.33 hrs	66,666.66
Total labour hours to meet estimated demand			2,38,666.66

*Standard labour time per doll has been calculated by dividing standard labour cost (per doll) by Rs.15.

Since the total available hours are only 2,00,000 therefore 38,666.66 hours will be utilised by employing the labour on overtime basis.

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2. Total discount on the sale of dress kit.

Out of 2,00,000 dress kits, 1,55,000 were sold along with four type of dolls. Each unit of sale of dress kit along with a unit of doll is entitled for a discount of 20% of Rs.50 i.e. Rs.10. The total discount amount on the sale of 1,55,000 dress kit comes to Rs.15,50,000.

Statement of Conservative Estimate of the Year's Profitability

	<i>Doll A</i>	<i>Doll B</i>	<i>Doll C</i>	<i>Doll D</i>	<i>Dress Kit</i>
Estimated demand (units)	50,000	40,000	35,000	30,000	2,00,000
	Rs.	Rs.	Rs.	Rs.	Rs.
Selling price per unit: (A)	60	80	100	120	50
Material cost per unit	20	25	32	50	15
Labour cost	15	15	18	20	5
Variable cost	6	6	7.20	8	2
*40% of labour cost	—	—	—	—	—
Total marginal cost: (B)	41	46	57.20	78	22
Contribution p.u. (C):{(A) – (B)}	19	34	42.80	42	28
Total contribution	<u>9,50,000</u>	<u>13,60,000</u>	<u>4,98,000</u>	<u>12,60,000</u>	<u>56,00,000</u>
On estimated demand	(50,000× Rs.19)	(40,000× Rs.34)	(35,000× Rs.42.80)	(30,000× Rs.42)	(2,00,000× Rs.28)
Less: Discount on dress kits (Refer to working note 2)					(15,50,000)
Net contribution	<u>9,50,000</u>	<u>13,60,000</u>	<u>4,98,000</u>	<u>12,60,000</u>	<u>40,50,000</u>
Total net contribution (Rs.)			91,18,000		
Less: Overtime premium (Rs.) (38,666.66 hrs × Rs.)15) (Refer to working note 1)			5,80,000		
Less: Fixed cost (Rs.)			<u>30,00,000</u>		
Profit (Rs.)			<u>55,38,000</u>		

Question 3

What do you understand by a Balanced Scorecard? Give reasons why Balanced Scorecards sometimes fail to provide for the desired results. Do you think that such a scorecard is useful for external reporting purposes?

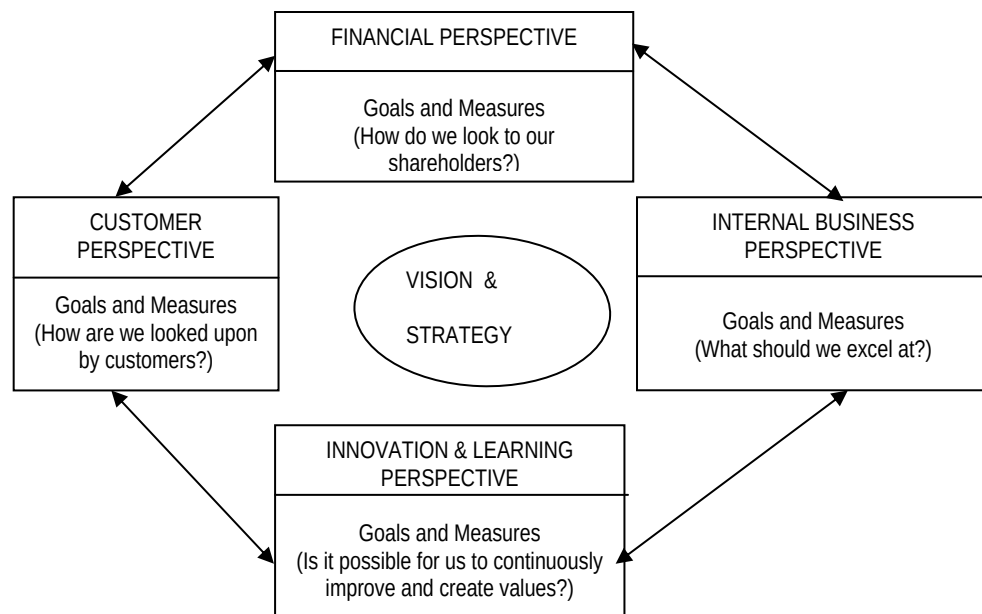
Answer

The Balanced Scorecard can be defined as 'an approach to the provision of information to management to assist strategic policy formulation and achievement. It emphasises the need to provide the user with a set of information, which addresses all relevant areas of performance in an objective and unbiased fashion. The information provided may include both financial and non financial elements, and cover areas such as profitability, customer satisfaction, internal efficiency and innovation'.

It is clear from the above definition that the central idea of the Balanced Scorecard is that managers should develop the measures on which they manage the business from four different perspectives:

1. customer satisfaction
2. internal business process e.g., operating cycle time.
3. kaizen approach (can we continue to improve and create value)
4. financial e.g., operating income by segments.

The following figure summarises the ideas of a Balanced Scorecard:



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According to Kaplan and Norton, the ultimate result of using the Balanced Scorecard approach should be an improved long-term financial performance. Since the scorecard gives equal importance to the relevant non – financial measures, it should discourage the short termism that leads to cuts in spending on new product development, human resource development etc which are ultimately detrimental for the future prospects of the company.

The responsibility to devise and implement a Balanced Scorecard should be that of the managers working with the business. Since every company is different, it shall need to work out for itself the various financial and non – financial measures, which need to be focussed upon for its own development. Since the Balanced Scorecard is recommended as a management tool used both for internal and external reporting purposes, it is again the manager's responsibility to decide as to what information needs to be disclosed and how any problems of confidentiality can best be overcome.

The following are some reasons why Balanced Scorecards sometimes fail to provide for the desired results;

- The use of non financial measures leads managers to think that they have a Balanced Scorecard already working for strategic purposes.
- Senior executives misguidedly delegate the responsibility of the Scorecard implementation to middle level managers.
- Company's try to copy measures and strategies used by the best companies rather than developing their own measures suited for the environment under which they function.
- There are times when Balanced Scorecards are thought to be meant for reporting purposes only. This notion does not allow a Business to use the Scorecard to manage Business in a new and more effective way.

It may be noted that the above-mentioned difficulties refer to the internal use of the Scorecard. It remains a matter of debate whether a Balanced Scorecard is applicable to external reporting. Critics argue that if the Scorecard is indeed a relevant driver of long term performance, shouldn't the information generated be of interest to the investment community? However, it has been noticed that the Scorecard does not translate easily to the investment community for the simple reason that it makes sense for individual business units and different individual projects rather than the company as a whole. Most companies have different divisions with their own mission and strategy and hence these individual scorecards cannot be aggregated into an overall corporate scorecard. However, in case the company somehow manages to overcome such a problem and indeed use its Scorecard for external reporting, it may end up passing sensitive information to its competitors which may end up being detrimental to the company in the long run. However,

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with changes in the thinking process of the investment community, such strategic reporting could well be accepted in the near future.

For a further understanding of the concept, please refer to chapter 14 of the Institute's Cost Management book.

Question 4

Kitchen King company makes a high-end kitchen range hood 'Maharaja'. The company presents the data for the year 2007 and 2008:

	2007	2008
1. Units or maharaja produced and sold	40,000	42,000
2. Selling Price per unit in Rs.	1,000	1,100
3. Total Direct Material (Square feet)	1,20,000	1,23,000
4. Direct material cost per square feet in Rs.	100	110
5. Manufacturing Capacity (in units)	50,000	50,000
6. Total Conversion cost in Rs.	1,00,00,000	1,10,00,000
7. Conversion cost per unit of capacity (6)/(5)	200	220
8. Selling and customer service capacity	300 customer	290 customer
9. Total selling and customer service cost in Rs.	72,00,000	72,50,000
10. Cost per customer of selling and customer service capacity (9)/(8)	24,000	25,000

Kitchen King produces no defective units, but it reduces direct material used per unit in 2008. Conversion cost in each year depends on production capacity defined in terms of Maharaja units that can be produced. Selling and Customer service cost depends on the number of customers that the selling and service functions are designed to support. Kitchen King has 230 customers in 2007 and 250 customers in 2008.

You are required

1. Describe briefly key elements that would include in Kitchen King's Balance Score Card.
2. Calculate the Growth, Price-recovery and productivity component that explain the change in operating income from 2007 to 2008.

Answer

Kitchen King's Score card should describe its product differentiation strategy. The key points that should be included in its balance score card are:

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- Financial Perspective – Increase in operating income by charging higher margins on Maharaja.
- Customer Perspective – Market share in high-end kitchen range market and customer satisfaction.
- Internal business Perspectives: Manufacturing quality, order delivery time, on time delivery and new product feature added.
- Learning and Growth Perspective: Development time for designing new end product and improvement in manufacturing process.

Operative Income:

	<i>(Amount in 000' Rs.)</i>	
	2007	2008
Revenue (40,000 × 1,000: 42,000 × 1,100)	40,000	46,200
Direct Material	12,000	13,530
Conversion cost	10,000	11,000
Selling and Customer service	7,200	7,250
Total cost	29,200	31,780
Operative Income	10,800	14,420

Change in operating Income is Rs. 36,20,000 (F)

A. Growth Component

- (a) Revenue effect = Output Price in 2007 {Actual units sold in 08 – Actual units sold in 07}
- = Rs. 1, 000 (42,000 units – 40,000 units)
- = Rs. 20, 00,000 (F)
- (b) The cost effect = Input price in 2007 {Actual units of input to produce 2007 output less Actual units of input which would have been used to produce year 2008 output on the basis of 2007}
- (i) Direct Material = Rs. 100 [1, 20,000 sq.ft. – 1, 20,000 sq.ft. $\times \frac{42,000 \text{ units}}{40,000 \text{ units}}$]
- = Rs. 6,00,000 (A)

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- (ii) Conversion cost and selling and customer service will not change since adequate capacity exists in 2007 to support 2008 output and customers. Hence variance

$$\text{Conversion cost} = 200 (50,000 - 50,000) = 0$$

$$\text{S \& Customer Service} = 25,000 (300 - 300) = 0$$

Increase in operating effect of Growth component is Rs. 14,00,000 (F)

B. Price recovery Component:

- (i) Revenue effect = Actual output in 2008 [Selling price per unit in 2008 less Selling price per unit in 2007]

$$= 42,000 \text{ units (Rs. 1,100 - Rs. 1,000)}$$

$$= \text{Rs. 42,00,000 (F)}$$

- (ii) Cost effect = Unit of input based on 2007 actual that would have been used to produce 2008 output {Input prices per unit in 2007 less Input prices per unit in 2008}

(a) Direct material = 1,26,000 sq. ft. (Rs. 100/sq. ft. – Rs. 110/sq. ft.)

$$= \text{Rs. 12, 60,000 (A)}$$

(b) Conversion Cost = 50,000 units (Rs. 200/unit – Rs. 220/unit)

$$= \text{Rs. 10,00,000 (A)}$$

(c) S & Customer Service = 300 customers (Rs. 24,000 – Rs. 25,000)

$$= \text{Rs. 3,00,000 (A)}$$

$$= \text{Rs. 25,60,000 (A)}$$

Increase in Operating income due to Price Recovery is Rs. 16,40,000 (F)
{Rs. 42,00,000 – Rs. 25,60,000}

(C) Productivity Component

Productivity component = Input Prices in 08{Actual units of input which would have been used to produce year 2008 output on the basis of 2007 actual less Actual Input}

- (i) Direct Material: Rs. 110/sqft

$$(1,26,000 \text{ units} - 1,23,000 \text{ units}) = \text{Rs. 3,30,000 (F)}$$

- (ii) Conversion Cost: Rs. 200/unit

$$(50,000 \text{ units} - 50,000 \text{ units}) = 0$$

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- (iii) Selling & Customer = Rs. 25,000
 (300 customers – 290 customers) = Rs. 2,50,000 (F)
 = Rs. 5,80,000 (F)

The change in operating income from 2007 to 2008 is analysed as follows:

	(Amount in 000' Rs.)				
	2007	Growth component	Price recovery	Cost effect of productivity component	2008
Revenue	40,000	2,000 (F)	4,200 (F)	—	46,200
Cost	29,200	600 (A)	2,560 (A)	580 (F)	31,780
Operating Income	10,800	1,400(F)	1,640 (F)	580 (F)	14,420

Question 5

EXE Wood Company is a metal and woodcutting manufacturer, selling products to the home construction market. Consider the following data for 2008:

	Rs.
Sandpaper	1,000
Materials-handling costs	35,000
Lubricants and coolants	2,500
Miscellaneous indirect manufacturing labour	20,000
Direct manufacturing labour	1,50,000
Direct materials inventory, Jan. 1, 2008	20,000
Direct materials inventory, Dec. 31, 2008	25,000
Finished goods inventory, Jan. 1, 2008	50,000
Finished goods inventory, Dec. 31, 2008	75,000
Work in process inventory, Jan. 1, 2008	5,000
Work in process inventory, Dec. 31, 2008	7,000
Plant-leasing costs	27,000
Depreciation – plant equipment	18,000
Property taxes on plant equipment	2,000
Fire insurance on plant equipment	1,500

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Direct materials purchased	2,30,000
Revenues	6,80,000
Marketing promotions	30,000
Marketing salaries	50,000
Distribution costs	35,000
Customer-service costs	50,000

Required:

1. Prepare an income statement with a separate supporting schedule of cost of goods manufactured. For all manufacturing items, classify costs as direct costs or indirect costs and indicate by V or F whether each is basically a variable cost or a fixed cost (when the cost object is a product unit). If in doubt, decide on the basis of whether the total cost will change substantially over a wide range of units produced.
2. Suppose that both the direct material costs and the plant-leasing costs are for the production of 4,50,000 units. What is the direct material cost of each unit produced ? What is the plant-leasing cost per unit ? Assume the plant-leasing cost is a fixed cost.
3. Suppose EXE Wood Company manufactures 5,00,000 units next year. Repeat the computation in requirement 2 for direct materials and plant-leasing costs. Assume the implied cost-behaviour patterns persist.

Answer

1. EXE Wood Company			
Income Statement			
For the year ended December 31, 2008			
	<i>Rs.</i>	<i>Rs.</i>	
Revenues		6,80,000	
Cost of goods sold:			
Beginning finished goods, January 1, 2008	50,000		
Cost of goods manufactured (see schedule below)	<u>4,80,000</u>		
Cost of goods available for sale	5,30,000		
Deduct ending finished goods, December 31, 2008	<u>75,000</u>	<u>4,55,000</u>	

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Gross margin (or gross profit)		2,25,000
Operating costs		
Marketing promotions	30,000	
Marketing salaries	50,000	
Distribution costs	35,000	
Customer-service costs	<u>50,000</u>	<u>1,65,000</u>
Operating income		<u>60,000</u>

EXE Wood Company
Schedule of Cost of Goods Manufactured
For the year ended December 31, 2008

	<i>Rs.</i>	<i>Rs.</i>
Direct materials:		
Beginning inventory, January 1, 2008		20,000
Purchases of direct materials		<u>2,30,000</u>
Cost of direct materials available for use		2,50,000
Ending inventory, December 31, 2008		<u>25,000</u>
Direct materials used		2,25,000 (v)
Direct manufacturing labour		1,50,000 (v)
Manufacturing overhead costs:		
Sandpaper	1,000 (v)	
Materials-handling costs	35,000 (v)	
Lubricants and coolants	2,500 (v)	
Miscellaneous indirect manufacturing labour	20,000 (v)	
Plant-leasing costs	27,000 (F)	
Depreciation – plant equipment	18,000 (F)	
Property taxes on plant equipment	2,000 (F)	
Fire insurance on plant equipment	<u>1,500 (F)</u>	<u>1,07,000</u>
Manufacturing costs incurred during 2007		4,82,000
Beginning work in process, January 1, 2007		<u>5,000</u>

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Total manufacturing costs to account for	4,87,000
Ending work in process, December 31, 2007	<u>7,000</u>
Cost of goods manufactured (to income statement)	<u>4,80,000</u>

2. Direct material unit cost = direct materials used ÷ Units produced
= Rs. 2,25,000 ÷ 4,50,000 units = Re. 0.50 per unit
- Plant-leasing unit cost = Plant-leasing costs ÷ Units produced
= Rs. 27,000 ÷ 4,50,000 units = Re. 0.06 per unit
3. The direct material costs are variable, so they would increase in total from Rs. 2,25,000 to Rs. 2,50,000 (5,00,000 units × Re. 0.50 per unit). However, their unit cost would be unaffected: Rs. 2,50,000 ÷ 5,00,000 units = Re. 0.50 per unit.
- In contrast, the plant-leasing costs of Rs. 27,000 are fixed, so they would not increase in total. However, the plant leasing cost per unit would decline from Re. 0.060 to Re. 0.054: Rs. 27,000 ÷ 5,00,000 units = Re. 0.054 per unit.

Note: All the Questions are arranged in a sequence as per the syllabus of 'Advanced Management Accounting' (AMA) [Paper 5 of Final (New) Course]. This RTP contains chapter name followed by the topic against each theory/practical question

EXERCISE

Question 1

The trading results of ZED Ltd. for 1995-96 and 1996-97 are as follows:

	1995-96	1996-97
	Rs.	Rs.
Material	1,60,000	2,05,200
Wages	96,000	1,32,000
Variable Overheads	40,000	46,000
Fixed Overheads	50,000	54,800
Total Costs	3,46,000	4,38,000
Profit	54,000	90,000
Sales	4,00,000	5,28,000

Selling price was enhanced by 10% 1996-97. Material prices and wage rates too have increased by 8% respectively.

Prepare a statement showing how much each factor has contributed to the variation in profit.

Answer

2. Rise in the figure of sales volume in 1996-97 =Rs.80,000
3. Percentage rise in the figure of sales volume in 1996-97 = 20%
4. Increase in material prices in 1996-97 due to 8% price increase = Rs.15,200
5. Increase in wages due to 10% increase in wage rates = Rs.12,000

Question 2

“Balanced score card and performance measurement system endeavours to create a blend of strategic measures, outcomes and drive measures and internal and external measures”. Discuss the statement and explain the major components of a balanced score card.

Answer

Refer to Chapter 10: Paragraph 10.4

Question 3

What are the elements of a Balanced Score card? Also explain how it can be used as a Financial Planning model.

Answer

Refer to Chapter 10: Paragraph: 10.4