

MOCK TEST PAPER – 2
FINAL COURSE: GROUP – II
PAPER – 5: ADVANCED MANAGEMENT ACCOUNTING
SUGGESTED ANSWERS/HINTS

1. (a) Working Note:

(1) Statement showing variable cost per 100-unit lot:

	₹	₹
Cushioned material:		
Padding	9.60	
Vinyl	<u>16.00</u>	
Total cushion material	25.60	
Cost increase 20%	<u>05.12</u>	
Cost of cushioned seat		30.72
Cushion fabrication labour: (30x0.5)		15.00
Variable overhead (Refer W.N.2) (20.00x0.5)		<u>10.00</u>
Variable cost per cushioned seat		<u>55.72</u>
Total variable cost per 100-unit lot		5,572

(2) Statement showing fixed overhead & variable overhead rate per direct labour hour:

	Variable Amount		Fixed Amount	
	₹	₹	₹	₹
	Total	Per DLH	Total	Per DLH
Indirect Material	16,80,000	5.60	-	-
Indirect Labour	15,00,000	5.00	-	-
Supervision	-	-	10,00,000	3.33
Power	7,20,000	2.40	-	-
Heat and light	-	-	5,60,000	1.87
Miscellaneous overheads	-	-	8,00,000	2.67
Depreciation	-	-	68,00,000	22.67
Employee Benefits:				

20% direct labour	18,00,000	6.00	-	-
20% supervision	-	-	200,000	0.66
20% indirect labour	3,00,000	1.00	-	-
	60,00,000	20.00	93,60,000	31.20

Variable overhead rate= ₹60,00,000/3,00,000=₹20.00/DLH

Fixed overhead rate=₹93,60,000/3,00,000=₹31.20/DLH

(3) Statement showing lost contribution margin from outside sales:

	Stylish Stool		Normal Stool
	₹		₹
Selling Price	<u>225.00</u>		<u>160.00</u>
Costs:			
Material	58.20		63.04
Labour (₹ 30.00x1.5)	45.00	(₹30.00x0.8)	24.00
Variable overhead (₹ 20.00x1.5)	<u>30.00</u>	(₹20.00x0.8)	<u>16.00</u>
Total Costs	<u>133.20</u>		<u>103.04</u>
Contribution margin per unit	91.80		56.96
Units produced	<u>100</u>		<u>125</u>
	<u>₹9,180</u>		<u>₹7,120</u>

Amount of contribution margin lost as a result of shifting production to the normal stool (₹9,180-₹7,120) i.e. ₹2,060

(4) Number of economy office stools that can be produced:

Labour hours to make a 100-unit lot of stylish stools 1.50x100 150 Hrs
Less: Labour hours to make a 100-unit lot of cushioned seats 0.50x100 50 Hrs
Labour hours available for normal stool 100Hrs
Labour hours required to make one normal stool 0.8 hours/stools
Use of extra labour devoted to normal stool production (100/0.8) 125 stools

Since the 'FQR' Division is operating at full capacity, the transfer price must consider the division's variable costs of manufacturing the seat plus the lost contribution margin that will result from losing outside sales. Thus, the transfer price (Refer W.N.1 & 3)

=₹ 5,572 + ₹ 2,060 = ₹7,632

- (b) It may not be possible to solve those problems using linear programming, in which non-linearity arises because of joint interactions between some of the activities regarding the total measure of effectiveness or total usage of some resource. Hence linear programming problem requires that the total measure of effectiveness and total resource usage resulting from the joint performance of the activities must equal the respective sums of these quantities resulting from each activity being performed individually. In some situations, it may not be true. For example, consider a situation where by a product is produced with the scrap material from the primary product. The material would still have to be procured if only one of the two products were produced. However, the total material requirements if both products are produced is less than the sum of requirements if each were produced individually. It may not be possible to handle such situation with linear programming problems.

2. (a) **Alternative 1 with no strike:**

(Refer W.N.-2, 3)

Cost of settlement is 15% increase i.e. ₹216 per unit

Annual cost of settlement

=54,000 units x ₹216

=₹1,16,64,000

Alternative 2 i.e. if strike goes ahead:

(Refer W.N.-1, 2, 3)

Extra cost:

		₹
(1)	Annual incremental labour cost (Ex. Strike Days Production) [54,000 units-(25 Days x 180 units per day)] x ₹144.00	71,28,000
(2)	Loss of contribution due to loss of sales [1,300 units x ₹ 2,200]	28,60,000
(3)	Incremental labour cost for balance 3,200 units i.e. [(25 Days x 180 units per day)-1,300 units] x ₹144.00 Overtime Premium (3,200 units x 1,584 x 0.5) Payment for Efficiency (3,200 units x 1/9 x 1,584 x 1.5)	4,60,800 25,34,400 8,44,800
(4)	Additional fixed costs	<u>1,00,000</u>
		1,39,28,000

If there is no strike, it will yield a financial benefit of ₹ 22,64,000 (₹ 1,39,28,000 – ₹ 1,16,64,000). Management should accept union's demand.

Working Note:

(1) Statement showing contribution per unit of 'KDK':

	₹
Selling Price	6,000
Less: Variable Costs:	
Labour Cost	1,440
Production Ex. Wages (3,600-1,440)	2,160
Distribution	<u>200</u>
Contribution	<u>2,200</u>

(2) Calculation of labour cost:

Direct labour=40% of production costs of ₹3,600=₹1,440 per unit.

With 15% increase, revised labour cost will be=₹1,440+₹216=₹1,656

With 10% increase, revised labour cost will be=₹1,440+₹144=₹1,584

(3) Statement showing budgeted production:

Total time in a day:	8 × 60	480 minutes
Less: Idle time	48 minutes	
Coffee break	20 minutes	
Instructions	22 minutes	
Training	30 minutes	<u>120 minutes</u>
Productive time per day:		360 minutes

Therefore, 'KDK' to be produced per man per day: $(360/180 \times 1) = 2$ units

Since 'KDK' are produced at the rate of 2 'KDK' per man day, so total yearly production will be:

2 units × 90 men × 300 days = 54,000 units of 'KDK'

- (b) There are two conventions normally adopted while drawing networks. In the early stages of network drawing, it is suggested that the conventions should be respected until sufficient experience has been gained to justify dropping them. These conventions are:

(a) Time flows from left to right.

(b) Head events always have a number higher than that of the tail events.

The above stated conventions allow activities to be referred uniquely by their tail and head event numbers, so that "activity 3-4" means only "the activity which starts from event 3 and proceeds to event 4"; it cannot mean "the

activity which starts from event 4 and finishes at event 3".

3. (a) The usual learning curve model is

$$y = ax^b$$

Y= Average Time per part for X parts

a = Time Required for first part=100 minutes

x = Cumulative number of parts

b = Learning coefficient and is equal to -0.322 (learning rate 80%)

Calculation of total time for 40 parts:

$$y = 100 \times (40)^{-0.322}$$

$$\log y = \log 100 - 0.322 \log 40$$

$$\log y = \log 100 - 0.322 [3 \log 2 + \log 5]$$

$$\log y = 2 - 0.322 [3 \times 0.30103 + 0.69897]$$

$$\log y = 1.484$$

$$y = \text{antilog of } 1.484$$

$$y = 30.48 \text{ minutes}$$

$$\text{Total time for 40 Parts} = 40 \times 30.48 = 1,219 \text{ minutes (A)}$$

Calculation of total time for 60 parts:

$$y = 100 \times (60)^{-0.322}$$

$$\log y = \log 100 - 0.322 \log 60$$

$$\log y = \log 100 - 0.322 [2 \log 2 + \log 5 + \log 3]$$

$$\log y = 2 - 0.322 [2 \times 0.30103 + 0.69897 + 0.47712]$$

$$\log y = 1.4274$$

$$y = \text{Antilog of } 1.4274$$

$$y = 26.75 \text{ minutes}$$

$$\text{Total Time for 60 Parts} = 60 \times 26.75 = 1,605 \text{ minutes (B)}$$

$$\text{The time required for parts 41 to 60 (B)-(A)} = 1,605 - 1,219 = 386 \text{ minutes}$$

- (b) This is the case for most manufactured products, but few services. In the services area, such as consulting, the bulk of all activities can be reconfigured for cost reduction during the "production" phase, which is when services are being provided directly to the customer. In the services environment the "design team" is still present but is more commonly concerned with streamlining the activities conducted

by the employees providing the service, which can continue to be enhanced at any time, not just when the initial services process is being laid out. For example-

1. Design team can lay out the floor plan of a fast-food restaurant, with the objective of creating an arrangement that allows employees to cover the shortest possible distances while preparing food and serving customers; this is similar to the design of a new product. However, unlike a product design, this layout can be readily altered at any time if the design team can arrive at a better layout, so that the restaurant staff can continue to experience high levels of productivity improvement even after the initial design and layout of the facility. In this situation costs are not locked in during the design phase, so there is less need for target costing.
 2. Another situation where target costing results in less value is the production of raw materials, such as chemicals. In this case there are no design features for a design team to labour over; instead, the industrial engineering staff tries to create the most efficient possible production process, which has little to do with cost reduction through the improvement of customer value by creating a product with a high ratio of features to costs.
- (c) Value engineering involves searching for opportunities to modify the design of each component or part of a product to reduce cost, but without reducing functionality or quality of the product. Value analysis entails studying the activities that are involved in producing the product to detect non value- adding activities that may be eliminated or minimized to save costs, but without reducing the functionality or quality of the product.

4. Working notes:

1. (a) Budgeted fixed overhead per unit:

$$= (\text{Budgeted fixed overheads p.a} / \text{Budgeted output for the year})$$

$$= ₹9,60,000 \text{ p.a.} / 1,20,000 \text{ units} = ₹8 \text{ per unit.}$$
 (b) Budgeted fixed overhead hour:

$$= \text{Budgeted fixed overhead per unit} / \text{Standard labour hours per unit}$$

$$= ₹8 / 2 \text{ hours} = ₹4 \text{ per hour}$$
2. **Statement showing standard cost and budgeted selling price**

	(₹)
(a) Standard cost per unit:	
Direct material	40
(5 kg × ₹8/- per kg)	

Direct labour	12
(2 hours × ₹6/- per hour)	
Fixed overhead	8
(2 hours × ₹4)	—
Total standard cost (per unit)	<u>60</u>
(b) Budgeted selling price per unit	
Standard cost per unit	60
Standard profit per unit	20
(25% on sales or 33 – 1/3% of standard cost)	—
Budgeted selling price per unit	<u>80</u>

3. (a) Actual output units for April, 2011:

$$\begin{aligned}
 \text{Fixed overhead volume Variance} &= \text{Efficiency variance} + \text{Capacity variance} \\
 &= ₹4,800 \text{ (F)} + ₹8,000 \text{ (A)} \\
 &= ₹3,200 \text{ (A)}
 \end{aligned}$$

Fixed overhead volume Variance:

= Absorbed Overhead - Budgeted Overhead

= (Standard hours for actual output - Budgeted Hours) × Standard Fixed Overhead Rate

$$\Rightarrow (2 \text{ Hrs} \times \text{actual output} - 10,000 \times 2) \times ₹ 4 = (-) ₹3,200$$

$$\Rightarrow \text{Actual output} = 9,600$$

- (b) Actual fixed overhead expenses:

Fixed overhead expenses variance = (Budgeted fixed overhead – Actual fixed overhead)

$$\Rightarrow (₹80,000 - \text{Actual fixed overhead}) = ₹2,800 \text{ (F)}$$

$$\Rightarrow \text{Actual fixed overhead} = ₹77,200$$

4. (a) Actual sales quantity units:

Sales Margin Volume Variance

$$= \text{Budgeted margin per unit} \left(\frac{\text{Actual sales quantity units} - \text{Budgeted quantity units}}{\text{quantity units}} \right)$$

$$\Rightarrow ₹20 (\text{Actual Sales Quantity} - 10,000 \text{ units}) = ₹8,000 \text{ (A)}$$

$$\Rightarrow \text{Actual sales quantity} = 9,600 \text{ units}$$

(b) Actual selling price per units:

$$\text{Sales price variance} = \left(\frac{\text{Actual Selling price per unit} - \text{Budgeted selling price per unit}}{\text{price per unit}} \right) \text{Actual Sales units}$$

$$\Rightarrow (\text{Actual selling price per unit} - ₹80) \times 9,600 \text{ units} = ₹19,200 \text{ (F)}$$

$$\Rightarrow \text{Actual selling price per unit} = ₹82$$

5. (a) Actual quantity of material consumed:

$$\text{Material usage variance} = \left(\frac{\text{Standard quantity} - \text{Actual quantity}}{\text{quantity per unit}} \right) \text{Standard price}$$

$$\Rightarrow (9,600 \text{ units} \times 5 \text{ kgs.} - \text{Actual Quantity}) \times ₹8 = \text{or } 12,800 \text{ (A)}$$

$$\Rightarrow \text{Actual Quantity} = 49,600 \text{ kgs.}$$

(b) Actual price per kg:

Material price variance

$$= (\text{Standard price per kg} - \text{Actual price per kg}) \times$$

Actual quantity of material consumed

$$\Rightarrow (₹8 - \text{Actual Price}) \times 49,600 \text{ kg.} = 9,920 \text{ (A)}$$

$$\Rightarrow \text{Actual price per kg} ₹ 8.20$$

6. (a) Actual direct labour hour used:

$$\text{Labour efficiency variance} = (\text{Standard hours} - \text{Actual hours}) \times \text{Standard rate per hour}$$

$$\Rightarrow (9,600 \text{ units} \times 2 \text{ hours} - \text{Actual hours}) ₹6 = ₹7,200 \text{ (F)}$$

$$\Rightarrow \text{Actual direct labour hours} = 18,000 \text{ hours}$$

(b) Actual direct labour hour rate:

$$\text{Labour rate variance} = \left(\frac{\text{Standard rate per hour} - \text{Actual rate per hour}}{\text{rate per hour}} \right) \text{Actual Direct labour hours}$$

$$\Rightarrow (₹6 \text{ per hour} - \text{Actual Rate per hour}) 18,000 \text{ hours} = ₹7,200 \text{ (A)}$$

$$\Rightarrow \text{Actual direct labour hour rate} = ₹6.40 \text{ per hour}$$

Annual financial Profit /Loss Statement
(for April, 2011)

<i>Account</i>	<i>Qty./ Hours</i>	<i>Rate/Price</i>	<i>Actual/ Value</i>
(a)	(b)	(c)	(d)=(b)×(c)
Sales: (A) (Refer to working note 4)	9,600 units	82	7,87,200
Direct Materials (Refer to working note 5)	49,600 kgs.	8.20 per kg.	4,06,720
Direct labour (Refer to working note 6)	18,000 hours	6.40 per hour	115,200
Fixed Overheads (Refer to working note 6 (a) and 7) (Rs.77,200/18,000 hours) (absorbed on direct labour hour basis)	18,000 hours	4.2888 per hour	77,200
Total costs: (B)			5,99,120
Profit : [(A) – (B)]			188,080

5. (a) Let us first assume that the crew is based at Kolkata. The flight KX1, which starts from Kolkata at 05:30 A.M, reaches Bangkok at 07:30 AM. The schedule time for the flight at Bangkok is 07:30 AM. Since the minimum layover time for crew is 5 hours, this flight can depart only on the next day i.e. the layover time will be 24 hours. Similarly, layover times for other flights are also calculated and given in the following table.

Crew based at Kolkata

Flight No.	BX1	BX2	BX3	BX4
KX1	24	25	6	11
KX2	22	23	28	9
KX3	16	17	22	27
KX4	10	11	16	21

The layover times for various flight connections when crew is assumed to be based at Bangkok are similarly calculated in the following table.

Crew based at Bangkok

Flight No.	BX1	BX2	BX3	BX4
KX1	20	19	14	9
KX2	22	21	16	11
KX3	28	27	22	17
KX4	10	9	28	23

Now since the crew can be based at either of the laces, minimum layover times can be obtained for different flight numbers by selecting the corresponding lower value out of the above two tables. The resulting table is as given below:

Flight No.	BX1	BX2	BX3	BX4
KX1	20*	19*	6	9*
KX2	22*	21*	16*	9
KX3	16	17	22*	17*
KX4	10*	9*	16	21

(*) with an entry in the above table indicates that the corresponds to layover time when the crew is based at Bangkok.

Now we can apply the assignment algorithm to find the optimal solution. Subtracting the minimum element of each row from all the elements of that row, we get the following matrix.

Flight No.	BX1	BX2	BX3	BX4
KX1	14	13	0	3
KX2	13	12	7	0
KX3	0	1	6	1
KX4	1	0	7	12

Since there is a zero in each column, there is no need to perform column reduction. The minimum number of lines to cover all zeros is four which is equal to the order of the matrix. Hence, the above table will give the optimal solution. The assignment is made below:

Flight No.	BX1	BX2	BX3	BX4
KX1	14	13	0	3
KX2	13	12	7	0
KX3	0	1	6	1
KX4	1	0	7	12

The optimal assignment is

From Flight No.	To Flight No.	Layover
KX1	BX3	6
KX2	BX4	9
KX3	BX1	16
KX4	BX2*	9
		40 hours

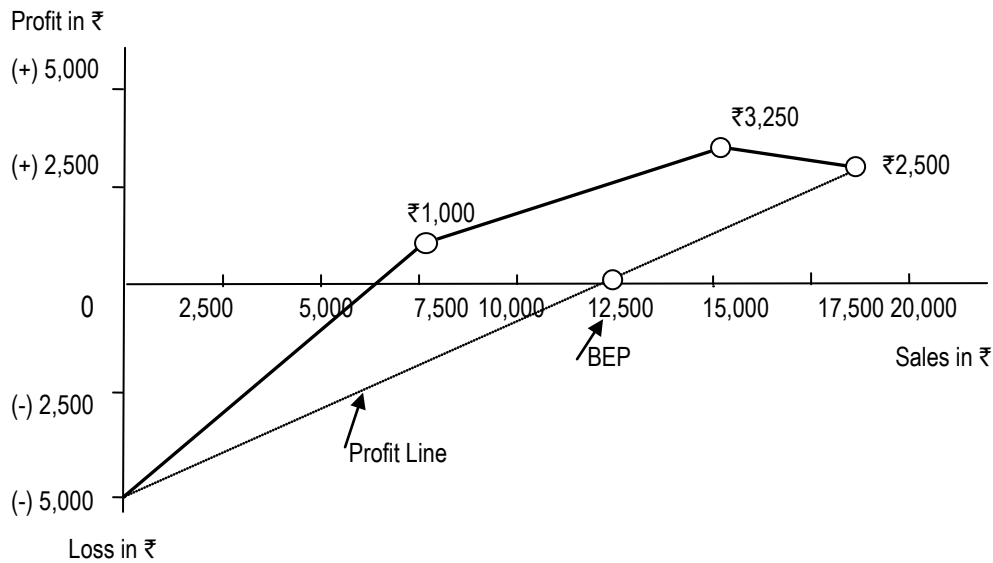
(b) The process of zero-base budgeting involves the following steps:

1. Determination of a set of objectives is one of pre-requisites and essential step in the direction of ZBB technique.
2. Deciding about the extent to which the technique of ZBB is to be applied whether in all areas of organizations' activities or only in a few selected areas on trial basis.
3. Identify those areas where decisions are required to be taken.
4. Developing decision packages and ranking them in order of performance.
5. Preparation of budget that is translating decision packages into practicable units/items and allocating financial/resources.

(c) Competitive pricing dominates in those situations where firms compete on the basis of bids. The bid is the firms offer price, and it is a prime example of pricing based on expectations of how competitors will price rather than on a rigid relation based on the concern's own costs or demand. The objective of the firm in the bidding situation is to get the contract, and this means that it hopes to set its price lower than that set by any of the other bidding firms. But however the firm does not ordinarily set its price below a certain level. Even when it is anxious to get a contract in order to keep the plant busy, it cannot quote price below marginal cost. On the other hand, if it raises its price above marginal cost, it increases its potential profit but reduces its chance of getting the contract.

6. (a) **Statement Showing Cumulative Sales & Profit**

Sales	Cumulative Sales		Variable Cost	Contribution	Cumulative Contribution	Cumulative Profit
	(₹)	(₹)	(₹)	(₹)	(₹)	(₹)
A	7,500	7,500	1,500	6,000	6,000	1,000
B	7,500	15,000	5,250	2,250	8,250	3,250
C	3,750	18,750	4,500	(750)	7,500	2,500



Break Even Point (BEP) = ₹ 12,500

- (b) The given problem is a balanced minimization transportation problem. The objective of the company is to minimize the cost.

	Destinations											
	IA		IB		IC		ID		IE			
KX	165	15	90	30	120	60	150	15	150	120/ 60/30 /0	30 60 60 15 15	
KY	105	60	90		300		135		180	60/0	15 15 15 30 30	
KZ	120		180		285		105	75	90	45	120/ 75/0	15 15 15 15
	75/15/0		30/0		60/0		90/15/0		45/0		300	
	15		0		165		30		60			
	15		0				30		60			
	15		0				30					
	15						30					
	60						30					

Since the number of allocations = 7 i.e. $(m+n-1)$, let us test the above solution for optimality.

(u_i+v_j) matrix for allocated cells

165	90	120	150		u_i 0
105					-60
			105	90	-45
v_j 165	90	120	150	135	

(u_i+v_j) matrix for un allocated cells

-	-	-	-	135	0
-	30	60	90	75	-60
120	45	75	-	-	-45
v_j 165	90	120	150	135	

$$\Delta_{ij} = C_{ij} - (u_i + v_j)$$

-	-	-	-	15
-	60	240	45	105
0	135	210	-	-

Since, all allocations are non negative, the allocation is optimal.

The optimal allocations are given below.

Factories	Destinations	Units (A)	Cost (B) (₹)	Total Cost (₹) $C=(A) \times (B)$
KX	IA	15	165	2,475
KX	IB	30	90	2,700
KX	IC	60	120	7,200
KX	ID	15	150	2,250
KY	IA	60	105	6,300
KZ	ID	75	105	7,875
KZ	IE	45	90	4,050
Total				32,850

*Alternative solution is also possible.

- (c) It is a network technique which is used for reducing the requirement of a particular resource due to its paucity. The process of resource leveling utilizes the large floats available on non-critical activities of the project and thus cuts down the demand on the resource. In resource leveling, the maximum demand of a resource should not exceed the available limit at any point of time. In order to achieve this, non critical activities are rescheduled by utilizing their floats. In resource leveling, constraint is on the limit of the resource availability.

7. (a) N = 18,000 units

O = 9,000 units

Ratio (N:O) = 2:1

Let t = No. of units of 'O' for BEP

N = 2t No. of units for BEP

Contribution of 'N' = ₹ 10.5 per unit

Contribution of 'O' = ₹ 9 per unit

At Break Even Point:

$$\Rightarrow 10.5 \times (2t) + 9 \times t - 15,000 = 0$$

$$\Rightarrow 30t = 15,000$$

$$\Rightarrow t = 500 \text{ units}$$

BEP of 'N' = $2t = 1,000$ units

BEP of 'O' = $t = 500$ units

- | | | |
|---------|------------------------------------|------------------|
| (b) (i) | Rework | Internal Failure |
| (ii) | Disposal of scrap | Internal Failure |
| (iii) | Warranty Repairs | External Failure |
| (iv) | Repair to manufacturing equipments | Internal Failure |
| (v) | Discount on defective sale | External Failure |
| (vi) | Raw material inspection | Prevention Cost |
| (vii) | Finished product inspection | Appraisal Cost |
| (viii) | Establishment of quality circles | Prevention Cost |

- (c) (i) All activities of a firm are not subject to learning effect. (Activities that have not been performed in the present operational mode, those performed by new or unfamiliar employees are subjected to learning effect, while those performed by familiar or experienced workmen will not be subjected to learning effect)

- (ii) (i) In case Market Demand is High – Product Beta (Lower Variable Cost and Higher Fixed Cost)
- (ii) In case Market Demand is Low – Product Gama
- (d) Relevant costs of producing one unit of the finished product

	₹
Cost of material 'KM' (realisable value)	40
Cost of labour (Being sunk cost)	-
Out-of-pocket expenses	<u>15</u>
	55

Allocated overhead is not relevant for the decision. The customer should be charged ₹55 per unit.

- (e) 'Kaizen Costing' is a Japanese term for a number of cost reduction steps that can be used subsequent to issuing a new product design to the factory floor. Some of the activities in the kaizen costing methodology include the elimination of waste in the production, assembly, and distribution processes, as well as the elimination of work steps in any of these areas. Though these points are also covered in the value engineering phase of target costing, the initial value engineering may not uncover all possible cost savings. Thus, kaizen costing is really designed to repeat many of the value engineering steps for as long as a product is produced, constantly refining the process and thereby stripping out extra costs. The cost reductions resulting from kaizen costing are much smaller than those achieved with value engineering but are still worth the effort since competitive pressures are likely to force down the price of a product over time, and any possible cost savings allow a company to still attain its targeted profit margins while continuing to reduce cost.