

## **Cost Accounting Assignment:**

### **Company Analyzed: Indian Oil Corporation Ltd.**

IndianOil is the country's largest commercial enterprise, with a sales turnover of Rs. 1,30,203 crore (US\$ 29.8 billion) and profits of Rs. 7,005 crore (US\$ 1,603 million) for fiscal 2003.

IndianOil is India's No.1 Company in Fortune's prestigious listing of the world's 500 largest corporations, ranked 189 for the year 2004 based on fiscal 2003 performance. It is also the 19th largest petroleum company in the world. IndianOil has also been adjudged No.1 in petroleum trading among the national oil companies in the Asia-Pacific region, and is ranked 325th in the current Forbes' "Global 500" listing of the largest public companies.

Q.1 Four themes that are important to managers for attaining success and in which management accounting can play major role in decision support in Voltas Ltd.:

### **Following are the main themes :**

We will here talk about the "Unitary products division of voltas" which includes Room air conditioners and water coolers.

#### **1. Customer focus:**

Customer focus is all about adding value for customer and in the process retain our existing customers as well as attract new one.

For decades, the household and retail segment had perceived the products of IOCL as a solid, dependable and well-engineered in the field of say LPG, lubricants and other petroleum products.

#### **2. Value chain and supply chain analysis :**

management accountant provide the information and many times be part of the decision in each of these functions in business.

##### **a) Research and development :**

Its all about generating and experimenting ideas related to new product, services or processes or advancing existing parameters of the product.

In IOCL there is continuous R and D on improving the products to meet the increasing customer satisfaction. They have made research in lubricants and petroleum products. The new premium high mileage petrol have been the most successful one.

##### **b) Design of products :**

It includes the products say SERVO, premium fuels - **XtraPremium** and **XtraMile**, Autogas (LPG

##### **c) Production:**

It's all about acquiring, coordinating and assembling resources to produce product or deliver a service .In IOCL it is about production of the petrol at various refineries, Hydrocracker,etc

**d)Marketing:** Marketing Network is spread throughout the country with over 22,000 sales points (the largest in the country). These include petrol / diesel stations, consumer outlets, lube distributors, SERVO SHOPS, SKO/LDO dealers, LPG distributors, etc

**e) Distribution:** "INDANE LPG" is being distributed in as many as 2064 towns with a customer population of 349 lakh served by a network of 4120 distributors - one of the largest networks in the world.

**f) Customer service:** IndianOil first anticipated customer needs in urban areas for better, cleaner and well-designed petrol stations almost a decade ago. IndianOil was also the first to develop a comprehensive **Retail Visual Identity** programme to re-orient the design and standards of our petrol and diesel stations. IndianOil developed its strategy, marking the entry of colour-coded canopies, multi-product dispensing pumps, concrete driveways, digital air towers, cyber cafes, automated teller machines, auto-car washes, etc., all of which later became industry norms. The addition of world class infrastructure facilities in IndianOil's marketing network has had a significant impact on its market share in the petroleum retail sales category.

The cost object and cost drivers and type of costs for Value chain are as follows:

**Cost object:** Various products say lubricants, LPG, other petroleum products

Sr.No.	Business function	Cost drivers	Type of cost
1	R and D	No. of new projects undertaken	Indirect and fixed
2	Design	Continuous upgradation	Indirect and fixed
3	Production	No. of various types of units manufactured	Indirect and variable
4	Marketing	No. of advertisements in news paper, media, banners etc.	Indirect and variable
5	Distribution	No. of units delivered	Direct and variable
6	Customer service	Expected no.of customers	Indirect and variable

### 3. **Key success factors :**

**a) Cost and efficiency :** IndianOil's sincere commitment to Quality, Safety, Health and Environment is reflected in the series of national and international certifications and awards (current ones listed separately) earned over the years

**b) Quality:** IndianOil's *SERVO* is the largest selling lubricant brand in India, with one of the largest ranges of automotive and industrial lubricants.

**c) Time:** It is the time to develop and bring new product to market. The pace of technological development has lead IOCL to bring the new product to the market more rapidly.

**d) Innovation:** Developed exclusively at IndianOil's world-class R&D Centre at Faridabad, there is a *SERVO* lubricant for virtually every single application. With over 42% market share and 450 grades, the country's leading *SERVO* brand lubricants from IndianOil are sold through over 8,100 IndianOil petrol/diesel stations, over 1,300 SERVOShops and a countrywide network of bazaar traders.

**4) Continuous improvement and benchmarking:** With the coming of the Reliance, BPCL, HPCL, IOCL has put many

drastic steps to continuously improve the product quality and bring new product to the market. IndianOil's ISO-9002 certified Aviation Service, with 68% market share, meets the fuel and lubricants needs of domestic and international flag carriers, Defence Services and private aircraft operators through 93 aviation fuelling stations. Between one sunrise and the next, IndianOil refuels over 900 aircrafts..

To,  
Mr. Arun Guha  
Vice President  
Indian Oil Corporation Ltd.

Sub: Queries and requirements

Dear Sir

Businesses are now operating in a globalized economy, with markets characterized by hyper competition. Unlike the older economy manufacturing industries, which were characterized by standardized products, the new economy faces many challenges. Enhanced buying power, greater variety of goods and services, information at the click of a button in this digital age add to these challenges.

These Corporations though are subsidiaries of IOCL are associated with certain flaws. I have tried my best efforts to find the reason behind it. But due to the insufficient data, I am unable to make a conclusion. I am planning to design and implement a program that significantly would increase productivity among customer service employees which, in turn, significantly raise the level of customer satisfaction with the service provided. Because employee productivity and customer satisfaction are key components of a successful customer service operation, these areas would be of particular value in meeting the challenges of this position.

I would request the understated information on the following corporations. The certain requisite which I request you to send me as soon as possible, so that I can make a significant contribution in helping the corporation achieve its customer service goals and objectives.

Thanking you.

Yours truly,  
Swapnil A. Gurumukhi

### **For Howell Corporation INC:**

- 1) In the case of oil company there is no indirect manufacturing cost as such. The same in the sheet is not justified.
- 2) Further the marketing, distribution, service cost is very high, which accounts for 25 % of the total revenue. It is necessary to know the areas where the amount is spent.
- 3) Also the amount for transportation, insurance, is not given.
- 4) The value for the holding cost is not mentioned. It has to be taken into consideration while making an income statement.

### **For Galaxy INC:**

- 1) Data for no. of units of various products not available.
- 2) Data for the cost of each unit not available. Also the variable cost such as the transportation cost, shipping cost, handling cost not available.
- 3) Data for total market share is not available.
- 4) Also the marketing researchers have not determined if the sale would increase or decrease if price is increased and by what amount.
- 5) Fixed costs as a percentage of Sales = 17.04 %

### **For Taylor & Associates INC:**

- 1) There is huge amount of cost in **indirect** cost pool, which accounts for 90% of the revenue. These costs are to be converted to the direct cost. So the breakup for the indirect cost is required.
- 2) Breakup of data for utilization in various fields is not available.
- 3) The market share is not available. Unless this data is provided we cannot compute the future prospect of the company.
- 4) Data for market share in terms of both volumes and prices are not available.
- 5) Data for raw material is not available.

### **For Parker Company INC:**

- 1) The combined data for the production is given. But it is known that the company is involved in the manufacturing of many such products. So the breakup of the data is essential.
- 2) Again the total quantity of the units produced are not given
- 3) Data for the direct manufacturing labour hours and machine hour is not available.
- 4) Market share of the particular product is required.
- 5) Further nothing much is clear about the machining cost. A lump sum amount of money is spent on this. You are required to

explain this precisely.

### Solution 2-29

#### Preparation of the income statement

Operating income calculation (all values in \$million)

Revenues		950
Cost of the goods sold		
Beginning finished goods Jan 1, 2004	70	
Cost of the goods manufactured	<u>+ 645</u> (from next part )	
Cost of goods for sale	715	
End finished goods Dec 31, 2004	<u>-55</u>	
	660	
Gross profit	290 (950 – 660)	
Less Marketing, distribution and customer service Costs	<u>-240</u>	
<b><u>OPERATING INCOME</u></b>	<b>= 50 ANS</b>	

#### **SCHEDULE OF THE COST OF GOODS MANUFACTURED FOR YEAR ENDED 31 DEC, 2004**

Direct material		
Beginning inventory	15	
Purchase of direct materials	<u>+ 325</u>	
Cost of Direct material avail for use	340	
Less ending inventory Dec 31, 2004	<u>-20</u>	
Direct material used	320(V)	
Direct manufacturing labour used	100(V)	
Plant supervisory salaries	5(F)	
Plant supplies	10(V)	
Plant utilities	30(V)	
Indirect manufacturing costs		
Plants overheads	35	
Indirect manufacturing labour	60(V)	
Depreciation	<u>80(F)</u>	
	640	
Deduct ending work in progress 31, dec 2004	<u>+5</u>	
		645

**COST OF GOODS MANUFACTURED** 645 ANS (used in income statement)

#### **SOLUTION 3-35**

(All monetary figures in \$)

Given information

Operating income OI = 200,000  
 No of units Q = 200,000  
 Selling price SP = 16  
 Variable cost VC = purchase cost + shipping cost  
                           = 10 + 2 = 12  
 Fixed costs FC = 600,000

**REQUIRED**

1. Calculate breakeven

$$T.R. - VC - FC = OI \text{ at BE } OI = 0 \text{ -----1}$$

Hence let q be the breakeven quantity

$$16 * q - 12 * q - 200,000 = 0$$

Therefore Breakeven quantity **q = 150,000 ANS.**

2. OI if 10% increase in unit sales

$$\begin{aligned} \text{New sales} &= 200,000 + 0.1 * 200,000 \\ &= 220,000 \end{aligned}$$

$$\begin{aligned} OI &= (SP * Q) - (VC * Q) - FC \\ &= (16 * 220,000) - (12 * 220,000) - 600,000 \\ &= 280,000 \end{aligned}$$

3. If the purchase price increases by 30% and if OI = 200,000 then the sales revenue = ?

$$\text{New purchase price} = 0.3 * 12 + 12 = 15.6$$

Hence again solving the equation 1

$$\begin{aligned} Q &= (OI + FC) / (SP - VC) \\ Q &= (200,000 + 600,000) / 1 \\ Q &= 800,000 \text{ units} \end{aligned}$$

$$\begin{aligned} \text{Hence the sales revenue} &= SP * Q \\ &= 16 * 800,000 \\ &= 12,800,000 \text{ ANS.} \end{aligned}$$

**SOLUTION Q 4-21**

Overview of the Job Costing system

INDIRECT COST POOL cO  
cO

COST ALLOCATION  
BASE

2.6 PER DIRECT LABOUR EXPENSE

COST OBJECT  
CONSULTING

$$\begin{aligned} \text{Budgeted indirect cost rate} &= \frac{\text{Cost in indirect cost pool}}{\text{Direct manufacturing labour hour}} && = \underline{13000000} \\ &= \frac{13158}{988} \end{aligned}$$

2. Compute markup as a rate % of professional labour costs  
If OI is 10% of revenues

$$\begin{aligned} \text{This means mark up} &= \frac{2000000}{18000000} \\ &= \mathbf{11.11\% \text{ ANS}} \end{aligned}$$

3. Total costs of the given categories

$$\begin{aligned} \text{Director} & \$200 \times 3 = 600 \\ \text{Partner} & \$100 \times 16 = 1600 \\ \text{Associate} & \$50 \times 40 = 2000 \\ \text{Assistant} & \$30 \times 160 = 4800 \\ \text{TOTAL VALUE OF THE ABOVE} & = 9000 \\ \text{Hence the budgeted cost} & = 9000 \times \text{RATE} \\ \text{RATE} & = \frac{5000000}{9000} \\ & = 555.55 \\ \mathbf{BUDGETED COST} & = \mathbf{9000 \times 555.55} \\ & = \mathbf{4995000 \text{ ANS}} \end{aligned}$$

If he wants to earn a 10% revenue then he should bid for

Let the Revenue be x

Hence OI = 10% of x = 0.1x

Using the CVP formula

$$\text{T.R.} = \text{TC} + \text{OI}$$

$$x = 4995000 + 0.1x$$

Hence  $x = 5550000$  BIDDING PRICE      **ANS**

**SOLUTION 5-23** (all figures in \$)

**1. MANUFACTURING OVERHEAD COST PER UNIT**

First of all we have to calculate the various rates applicable to the calculators

Given

Total machining cost = 375000

Let x be the rate for the machine hours

	Mathematical	Financial
Machine hours	25000	50000

Hence  $x*(25000 + 50000)=375000$

Giving  $x= 5$

Total cost	$x*25000$ (M)	$x*50000$ (F)
	=125000	=250000

Proceeding in the same way for the rest of the manufacturing overheads we get all the costs

In the tabular form we can put it like this

	MATHEMATICAL	FINANCIAL
	CALCULATOR	CALCULATOR



<u>ACTIVITY</u>	<u>Total</u>	PER UNIT	<u>Total</u>	PER UNIT	_____
	<u>Costs</u>	(1)/50000	<u>Costs</u>	(2)/100000	
	(1)	(2)			
Machining	125000	2.5	250000	2.5	
Set up costs	60000	1.2	60000	0.6	
Inspection costs	70000	<u>1.4</u>	35000	<u>0.35</u>	
SUMMATION OF THE ABOVE		<u>5.10</u>	<u>3.45</u>		

MANUFACTURING OVERHEAD COST PER UNIT

MATHEMATICAL CALCULATOR - \$5.10      ANS

FINANCIAL CALCULATOR - \$3.45      ANS

2. MANUFACTURING COST PER UNIT for each product

<u>ACTIVITY</u>	MATHEMATICAL CALCULATOR		FINANCIAL CALCULATOR		_____
	<u>Total</u>	PER UNIT	<u>Total</u>	PER UNIT	
	<u>Costs</u>	(1)/50000	<u>Costs</u>	(2)/100000	
Direct material	150000	3.0	300000	3	
Direct manufacturing Labour	50000	<u>1.0</u>	100000	<u>1</u>	
	<b>4.0</b>	<b>4.0</b>			

Hence adding the per unit manufacturing overhead to these values we get

MANUFACTURING COST PER UNIT

MATHEMATICAL CALCULATOR = \$ 9.45 (4.0+5.10)

FINANCIAL CALCULATOR = \$ 7.45 (4.0+3.45)

Performance at a glance:

OPERATIONS		2003-04	2002-03	2001-02	2000-01	1999-00
<b>Operating Performance</b>						
Product Sales (Domestic+Exports)	Million Tonnes	48.61	47.56	48.07	48.82	49.69
Refineries Throughput	Million Tonnes	37.66	35.29	33.76	33.22	32.42
Pipelines Throughput	Million Tonnes	45.17	41.11	40.36	39.44	39.50

MARKETING NETWORK AND FACILITIES						
State Offices		15	15	15	15	15
Divisional Offices	Nos.	44	44	44	44	44
LPG Area Offices	Nos.	35	35	35	35	34
Terminals and Depots	Nos.	162	169	182	186	188
Aviation Fuel Stations	Nos.	94	93	92	92	92
Total Product Tankage	Lakh kl.	68.74	68.89	68.45	64.77	61.25
LPG Bottling Plants	Nos.	87	79	78	71	61
LPG Bottling Capacity	'000 Tonnes	3,674	3344	3221	3007	2335
Retail Outlets	Nos.	9,138	8034	7870	7549	7239
SKO/LDO Dealers	Nos.	3,521	3497	3455	3436	3430
Indane Distributors	Nos.	4,350	4120	3881	3424	3251
Towns with Indane	Nos.	2,177	2064	1985	1637	1531
Indane Customers	Lakhs	375	349	322	296	239
<b>MANPOWER</b>	Nos.	30,801	31500	31675	32266	34059

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## Financial Performance

FINANCIAL	2003-04	2002-03	2003-04	2002-03	2001-02	2000-01	1999-00
	US \$ million		Figures in Rs. Crore				
Turnover	29,795	25,233	1,30,203	1,19,884	114,864	117,371	94,141
Gross Profit #	2,749	2,286	12,013	10,863	7,533	5,860	5,971
Profit Before Interest & Tax	2,321	1,937	10,144	9,202	6,141	4,636	3,976

Profit Before Tax	2,218	1,771	9,691	8,414	4,599	2,962	2,970
Profit After Tax	1,603	1,287	7,005	6,115	2,885	2,720	2,443
Dividend	561	475	2,453	2,258	857	740	584
Dividend Tax	72	51	314	240	0	75	64
Retained Earnings	970	761	4,238	3,617	2,028	1,905	1,795
Value Added	4,270	3,728	18,659	17,750	14,706	12,989	12,210
Contribution to Central Exchequer	5,169	4,352	22,589	20,676	16,561	16,118	15,138
Cumulative Dividend	1,933	1,262	8,448	5,995	3,737	2,880	2,140

# Profit before Depreciation, Interest, Expenditure and Tax

### What Corporation Owns

Gross Fixed Assets	8,327	7,199	36,388	34,204	29,741	27,144	23,107
Depreciation	3,282	2,649	14,341	12,548	10,961	9,634	8,431
Net Fixed Assets	5,045	4,550	22,047	21,620	18,780	17,510	14,676
Capital Works in Progress	1,210	760	5,286	3,609	5,200	4,527	3,517
Investments	1,280	1,129	5,596	5,363	9,722	3,444	3,149
Finance Lease Receivables	27	30	119	141	161	-	-
Working Capital	1,462	1,360	6,388	6,464	3778	10,959	7,440
Misc. Expenditure	17	21	73	99	145	167	0
<b>Total</b>	<b>9,041</b>	<b>7,850</b>	<b>39,509</b>	<b>37,296</b>	<b>37,786</b>	<b>36,607</b>	<b>28,782</b>

### What Corporation Owes

Net Worth							
- Share Capital	267	164	1168	779	779	779	779
- Reserves	5,007	3,820	21,879	18,149	14,532	15,192	13,286
<b>- Total</b>	<b>5,274</b>	<b>3,984</b>	<b>23,047</b>	<b>18,928</b>	<b>15,311</b>	<b>15,971</b>	<b>14,065</b>
Borrowings	2,787	3,051	12,178	14,495	19,070	20,636	14,717
Deferred Tax Liability	980	815	4,284	3,873	3,405	-	-
<b>Total</b>	<b>9,041</b>	<b>7,850</b>	<b>39,509</b>	<b>37,296</b>	<b>37,786</b>	<b>36,607</b>	<b>28,782</b>

Note: Previous year's figures have been regrouped, wherever necessary.

RATIOS	2003-04	2002-03	2003-04	2002-03	2001-02	2000-01	1999-00
	US\$		Rupees				
Debt Equity Ratio							
- Total Debt to Equity	0.53:1	1.77:1	0.53:1	0.77:1	0.25:1	1.29:1	1.05:1
- Long Term Debt to Equity	0.31:1	0.39:1	0.31:1	0.39:1	0.48:1	0.40:1	0.35:1
Earning per Share (Rupees) *	1.37	1.10	59.97	52.35	37.05	34.94	31.38*
Cash Earnings per Share (Rupees) *	1.74	1.40	75.97	66.58	54.93	50.65	57*
Profit After Tax to Average Net Worth (%)	33.38	35.72	33.38	35.72	18.40	18.10	18.6
Net Worth per Equity Share (Rupees)	<b>4.52</b>	<b>3.41</b>	<b>197.32</b>	<b>162.05**</b>	<b>196.63*</b>	<b>205.10</b>	<b>180.62</b>