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## UNIT 11 COST ANALYSES & MEASUREMENT

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### Objectives

After reading this unit you would be able to:

- discuss Cost analyses & measurement in terms of Logistics;
- define Cost drivers and Activity Based Costing (ABC) etc.;
- illustrate Logistics cost; and
- have an insight from customer profitability analysis.

### Structure

- 11.1 Introduction
- 11.2 Cost Drivers
- 11.3 Activity Based Costing (ABC)
- 11.4 Logistics Cost
- 11.5 Customer Profitability Analysis
- 11.6 Summary
- 11.7 Self Assessment Questions
- 11.8 References and Suggested Further Readings

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### 11.1 INTRODUCTION

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Many a times it so happens that even if a company has good products, it offers good service like delivering the products on time. It has plethora of satisfied customers. The company has sufficiently good productivity and growth levels. Even then it fails to achieve sufficiently good profitability levels. Many reasons are cited for this like lack of sales, harder times, competitiveness etc. However in reality, the main reason for this is the lack of knowledge of possible losses. It is here that one finds the need for determining the “true” cost for a cost object (product, job, service, or customer). This is important in order to generate opportunities for cost improvement for probable objects that are generating losses. It is also important to prepare a business plan and improve strategic decision-making. Major factors for determination of market price are competitors (those who are offering a similar product) and customer value. There are many ways to determine object cost like intuition, guessing, traditional cost accounting and activity based costing. Total cost for a cost object is determined by the direct cost (e.g. labor, material, transportation etc.) and the overhead cost.

In this unit we will discuss about cost drivers and Activity Based Costing (ABC). We will also study about the logistics cost and ways to reduce them.

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### 11.2 COST DRIVERS

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As businesses have become more complex, the elements of cost also have become complex. Overhead costs are replacing the direct costs of labor and purchased materials. These overhead costs are incurred on technology and the managers who maintain productivity and production. As managers attempt to understand and manage cross-functional business processes, organizations are finding that traditional approaches for managing these costs are ineffective.

**Cost and Performance Measurement in SCM**

Business processes need to be mapped so that the activities and associated drivers are identified and their relationships analyzed. Analysis like ABC helps to understand variable cost behavior and cost-of-quality for activities and processes.

The most useful way to analyze costs is to do it in terms of the various stages of the overall value chain of which the firm is a part. Gattorna (1998) defined cost driver as factor that creates or influences cost. Cost-driver analysis identifies the cause of cost, e.g. the number of customer orders received in a specific period. A positive cost driver results in a revenue, production or support related activities that generate profit. A negative cost driver causes unnecessary work and reduces profitability. A cost pool is a grouping of costs caused by related cost drivers and activities. Gattorna illustrated the concept of cost drivers with an example (Figure 11.1), which comprised of identifying activities and the cost drivers & cost pool associated with them.

The need of identifying the cost drivers arose due to the dissatisfaction with the conventional cost accounting. These problems were summarized by Christopher (1998) as follows:

- There is general ignorance of the true costs of servicing different customer types/channels/market segments.
- Costs are captured at too high a level of aggregation.

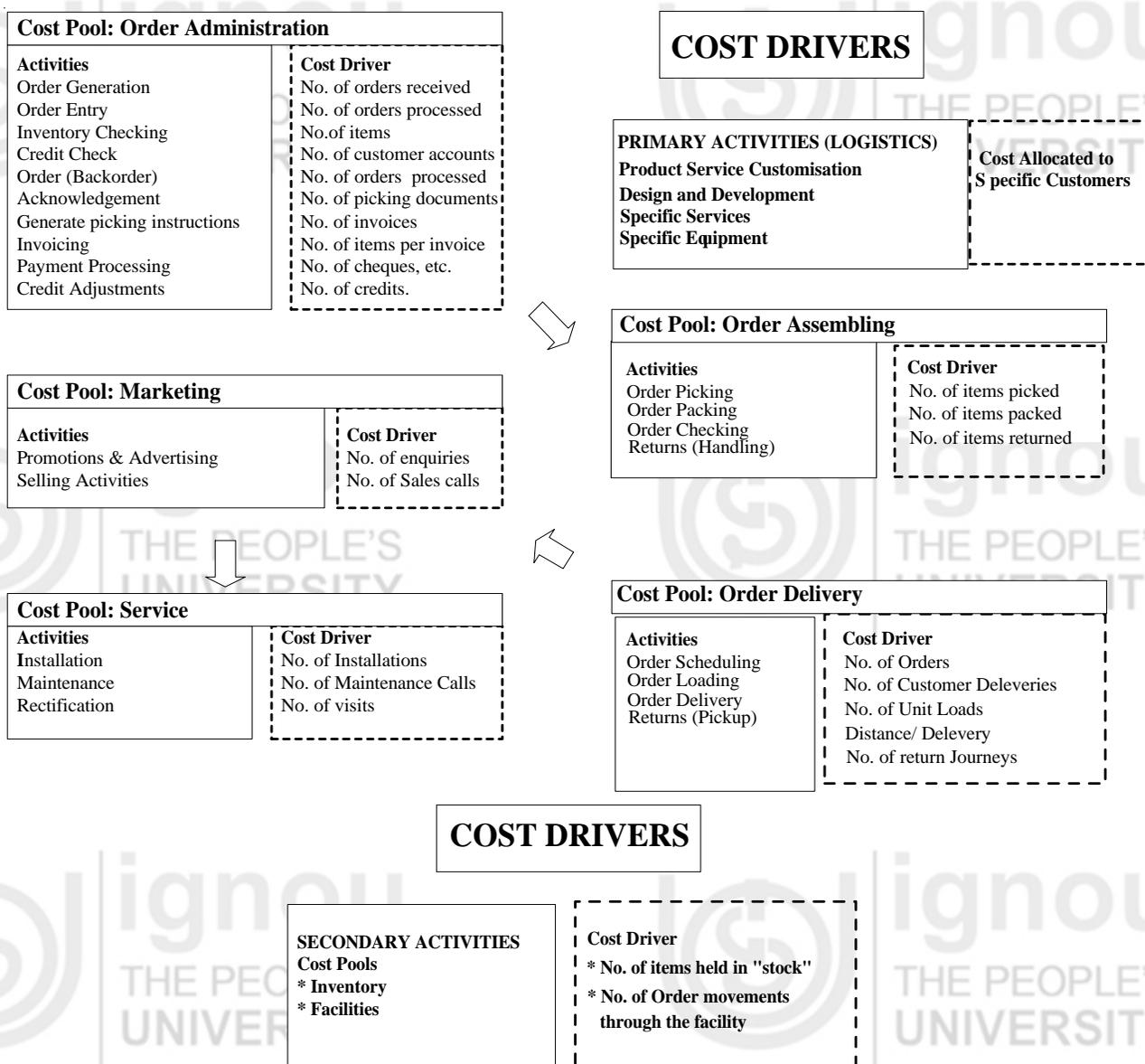


Figure 11.1: Identifying activities, cost drivers and cost pools within the value chain  
 Source: Gattorna & Walters (1996)

- Full cost allocation still reigns supreme
- Conventional accounting systems are functional in their orientation rather than output oriented.
- Companies understand product costs but not customer costs- yet products don't make profits, customers do.

The above discussion highlighted lack of visibility in costs as they are incurred in various stages in logistics. Christopher(1998) stressed the need for capturing the costs as products and orders flow towards the customer. It is here that Activity Based Costing (ABC) comes into picture and the key to ABC is to define the “cost drivers” from the logistics point of view.

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### 11.3 ACTIVITY BASED COSTING

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It is a more accurate cost management methodology. It focuses on indirect costs (overheads). It identifies each expense category to the particular cost object and makes “indirect” expenses “direct”. It is based on the fact that cost objects consume activities and activities consume resources. It is this consumption of resources that drives costs. One can use ABC when overhead is high, products are varied, cost of errors is high and competition is hard. ABC also makes it easier to understand variable cost behavior and cost-of-quality for activities and processes.

Litt in one of his articles commented, “Activity based costing (ABC) is an accounting technique that utilizes cost attachment rather than cost allocation to determine the actual cost of products and services”. ABC has the ability to clearly define the critical attributes of today's business processes. The real beauty of an ABC model is that it forces organizations to adopt a cost management paradigm that focuses on understanding their processes. Once an organization accepts this paradigm, they soon recognize that their products or services are produced through cross-functional business processes. These processes contain a wide variety of activities that not only define the process, but also more importantly, reflect how effectively the process performs.

The ABC can be performed by:

- Identifying activities
- Determining cost for each activity
- Determining cost drivers (Cost drivers are the factors that affect the cost of an activity, e.g. poor quality)
- Collecting activity data
- Calculating product cost

Activity based costing (ABC) highlights the customer characteristics in terms of the buying behavior and distribution requirements. It depicts the cost attached at each level of activity and thus decides about the true cost. ABC uses a more logical basis for allocating the costs. Let us take an example of a manufacturing company, which sells its products through a network of dealers to the industrial users. We would first use the traditional cost accounting method and then use ABC to demonstrate the difference.

**Table 11.1: Traditional Cost Accounting Method**

Sno.	Traditional Cost Bases	Cost (in thousands)
1	Salaries	889
2	Wages	926
3	Depreciation	400
4	Rent/Electricity/Telephone	1100
5	Maintenance	225
6	Fuel	375
	<b>Total</b>	<b>3915</b>

You can see that in table 11.1 that the costs are functional in their orientation rather than output oriented. There is a lack of visibility of the costs across from the logistics point of view. In the table 11.2, you will see the difference. This costing is based on costs of each activity and thus a representative of the true cost.

**Table 11.2: Activity Based Costing (ABC)**

S.No.	Activity Cost Bases	Cost Drivers	Cost (in thousands)
1	Order Administration	No. of orders received No. of orders processed No. of items No. of customer accounts No. of orders processed No. of picking documents No. of invoices No. of items per invoice No. of cheques, etc. No. of credits.	525
2	Order Assembling	No. of items picked No. of items packed No. of items returned	425
3	Order Delivery	No. of Orders No. of Customers Deliveries No. of Unit Loads Distance/ Delivery No. of Return Journeys	1075
4	Marketing	No. of enquiries No. of Sales calls	625
5	Service	No. of Installations No. of Maintenance Calls No. of visits	485
6	Inventory/ Facilities	No. of items held in "stock" No. of Order movements through the facility	950
		<b>Total</b>	<b>4085</b>

One can see that once you got the idea of true-costs you can save a possible loss of Rs 170,000/- as shown in the table 11.1 and table 11.2. The ABC model thus forces organizations to adopt a cost management paradigm that focuses on understanding their processes and prevent losses.

**Activity 1****Cost Analyses and  
Measurement**

IGNOU is a service industry in its own right. One can visualize this organization from a supply chain perspective also. Its Material Production and Distribution Division (MPDD) prints and dispatches the study material to the students, Schools develop the course material, Regional Services Division (RSD) supports the students and Student Registration and Evaluation Division (SRED) keeps the students records and evaluations. Do an activity based costing (ABC) for the fees of a course for the management program of IGNOU.

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**11.4 LOGISTICS COST**

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The performance of a supply chain can be illustrated with the help of total logistics cost. Since logistics begins from start and continues till the end, the costs associated with it are of immense importance in the supply chain. There is a need of a trade-off based cost accounting system that is activity based and a change in any process is followed by a change in the costs.

To define the logistics cost one must define the desired outputs from the logistics system and then seek to identify the costs associated with providing those outputs. Christopher (1998) defined the concept of “mission”. In context of logistics, a mission is a set of customer service goals to be achieved by the system within a specific product/market context. Missions are specific to the type of market served. The successful achievement of defined mission goals involves inputs from a large number of functional areas and activities. A good logistics costing system is thus based on the total systems cost of meeting desired logistic objectives (the ‘output’ of the system) and the costs of the various inputs involved in meeting these outputs. This approach is called “Mission Costing”.

The cost of logistics varies from industry to industry e.g. building material say bricks will have very high logistics costs as compared to Pharmaceuticals. It is generally believed that logistics costs are 15-20% of the turnover. Logistics becomes more and more expensive as the cost of fuel, land, safety, environmental conservation and human resources increase. However there is also a general belief that new productive models and good practices are effective in reducing the cost of logistics. Logistics has an impact on the overall financial performance of a company. It has an effect on return on assets (ROA).

Let us discuss some expense saving strategies for the logistician (Ashcroft, 2004).

Companies who have yet to squeeze all possible benefits from their supply chain, significant low hanging benefit opportunities may be waiting in the Logistics area. This is especially true with respect to mergers or acquisitions. For a Lowest Cost Logistics approach to succeed, it must begin by addressing two key starting points, firstly, a clear identification of the firm’s Customer Service / Business Goals; and secondly a detailed, accurate and complete calculation of current Logistics costs. The task of identifying the customer service targets and business goals must be a collaborative effort including all stakeholders within the organization and even key

customers, carried out on a participative basis to ensure consensus and buy-in on the results.

Logistics costs identified by incorporating all business costs incurred due to logistics functions, support costs and transfer credits. Once these cost numbers are known to be accurate and truly representative, the next step is to Benchmark them against companies in similar business and industry areas (you will read it in more detail in the next unit). Another approach to drive these costs down is to utilize ABC Costing methodologies (as discussed earlier).

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### 11.5 CUSTOMER PROFITABILITY ANALYSIS

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Earlier accounting systems were unable to add value to a particular customer. As customer profitability was calculated on the basis of gross profit only. These systems were based on the formula given below:

Customer Profitability = Net sales revenue generated by the customer in a given period – Costs of goods sold for actual product mix purchased.

To derive the real profitability of customers many other things are to be taken into account. Customer profitability analysis illustrates the cluster of customers who are not worth serving or in other words are not providing profits. Many of the costs like cost of service, order processing costs and transport costs, material handling costs, inventory and warehousing costs that depends on the customer characteristics. The basic principle of customer profitability analysis thus depends on identifying the cost saving opportunities if business is done only with 'good' customers only. Christopher (1998) gave a checklist of costs, which should be included when doing an analysis.

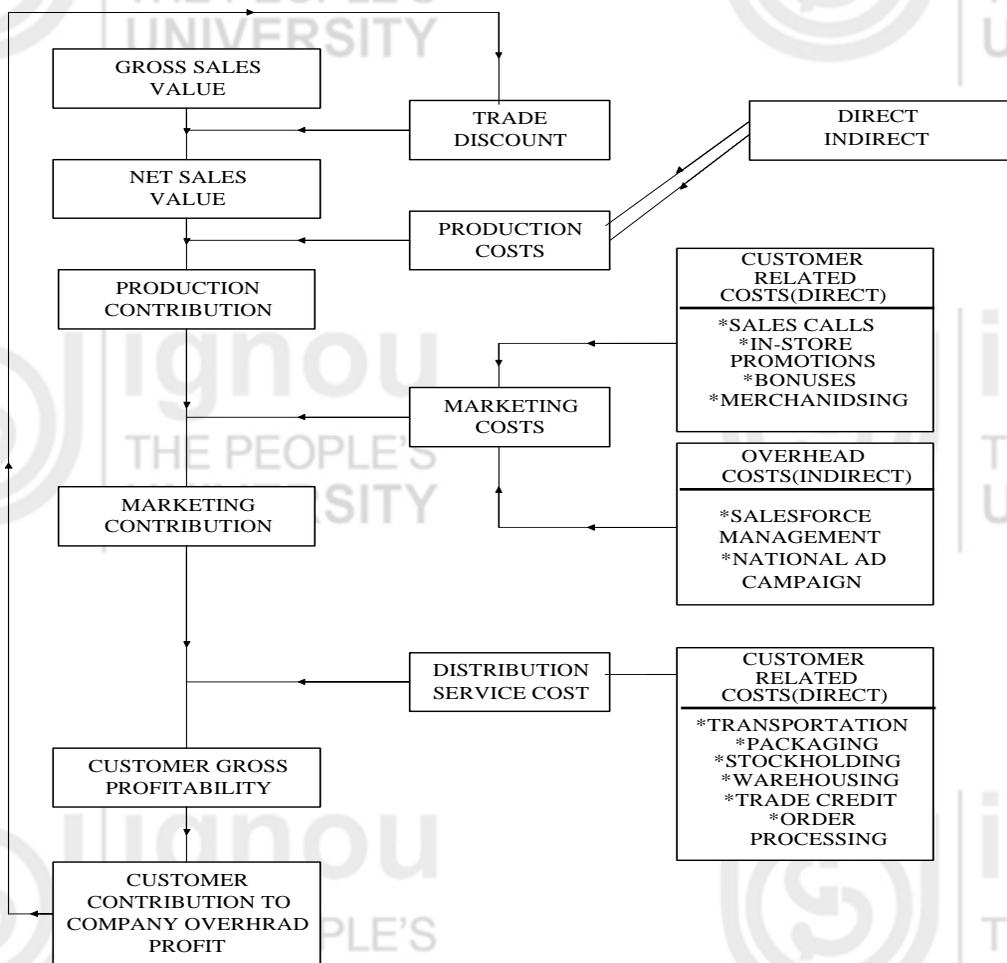
**Table 11.3: The Customer Profit and Loss Account (source: Christopher (1998))**

<b>Revenues</b>	<ul style="list-style-type: none"> <li>• Net Sales Value</li> </ul>
<i>Less</i>	
<b>Costs</b> (Attributable costs only)	<ul style="list-style-type: none"> <li>• Cost Of Sales (Actual Product Mix)</li> <li>• Commissions</li> <li>• Sales Calls</li> <li>• Key Account Management Time</li> <li>• Trade Bonuses and Special Discount</li> <li>• Order Processing Costs</li> <li>• Promotional Costs (Visible And Hidden)</li> <li>• Merchandising Costs</li> <li>• Non-Standard Packaging/ Unitization</li> <li>• Dedicated Inventory Holding Costs</li> <li>• Dedicated Warehouse Space</li> <li>• Material Handling Costs</li> <li>• Transport Costs</li> <li>• Documentation/Communications Costs</li> <li>• Returns/Refusals</li> <li>• Trade Credit (Actual Payment Period)</li> </ul>

Christopher (1998) also presented a model for customer profitability analysis. The model is presented in figure 11.2. It explains the deductions from the gross sales

value of the order like the discounts, direct costs, attributable indirect costs etc. After all these steps one gets the customer's gross contribution. Any other customer related costs like trade credit, returns etc are subtracted to give a net contribution to overheads and profit.

The main purpose of doing this exercise is to get an idea of the less profitable customers vis-à-vis more profitable customers. It can guide the managers to derive strategies for managing customers with high servicing costs. Customer profitability matrix is another approach for getting some generalized guidance for making strategic decisions. The main idea behind all these approaches is to develop an accounting system that routinely collects data on customer's profitability.



**Fig 11.2: Customer Profitability Analysis: A Basic Model**

source: Christopher (1998)

## 11.6 SUMMARY

It is evident from the discussions in the sections of this unit that logistics costs have a huge impact on the total costs. It is therefore important to manage them well. It has been proved over a period of time that the traditional approaches to costing results in business losses. This unit has highlighted another approach to costing that is activity based costing (ABC). By ABC one can generate opportunities for cost improvement for probable objects that are generating losses. We have studied about cost drivers in logistics. A positive cost driver results in a revenue, production or support related activities that generate profit. A negative cost driver causes unnecessary work and reduces profitability. Finally this unit has touched upon logistics cost and customer

profitability analysis. In the subsequent unit you will be studying about the benchmarking and best practices and methods of measuring the performance of a supply chain.

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## 11.7 SELF ASSESSMENT QUESTIONS

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- 1) “Logistics Management impacts not only upon the profit and loss account of business but also upon the balance sheet?” Comment!
- 2) When Christopher says that “supply chains compete, not companies” what exactly does he mean. Evaluate this statement from the cost point of view.
- 3) What were the reasons for the fall of management accounting? Explain activity based costing and mention the benefits it had over the management accounting.
- 4) What are cost drivers in a supply chain? Take the case of a paper manufacturing company and portray all its cost drivers.
- 5) What is Customer Profitability Analysis? Why it has gained importance in the recent times. Is it ethical to deny a customer that is not profitable?

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## 11.8 REFERENCES AND SUGGESTED FURTHER READINGS

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- 2) Bradley S. Litt(2001), “Learning the ABCs of Cost Analysis”, at <http://www.gantthead.com/article.cfm?ID=18628>
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