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## Activity Based Costing In Modern Enterprises: A Case Study

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### **Abstract:**

*Activity-based costing (ABC) is a method for determining true costs. Though ABC is a relatively recent innovation in cost accounting, it is rapidly being adopted by companies across many industries, within government and other organizations like institutions, finance or service sectors. In the light of current practices, this paper emphasizes to understand the need and importance of ABC costing in the organizations. This is coupled with management methods, an extensive range of uses, empowering utilization of ABC information for a wide variety of company functions and operations such as process analysis, strategy support and time-based accounting, monitoring wastage and quality along with productivity management.*

**Keywords:** *Activity-Based Costing, Modern Manufacturing, Cost Accuracy, Decision-Making, Traditional Costing Methods, Profitability, Resource Allocation, Competitiveness, Implementation Challenges.*

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### **Introduction:**

In recent years, companies have reduced their dependency on traditional accounting systems by developing activity-based cost management systems. Traditional costing systems have a tendency to assign indirect costs based on something easy to identify (such as direct labor hours). This method of assigning costs can be very inaccurate because there is no actual relationship between the cost pool and the cost driver. This can make indirect costs allocation inaccurate. Initially, managers viewed the ABC approach as a more accurate way of calculating product costs. But ABC has emerged as a tremendously useful guide to management action that can translate directly into The interest of manufacturer's in the ABC system grown significantly under the rapid growth of some markets especially in the manufacturing area, the increasingly

growing indirect costs under the use of automated systems and the need for more accurate cost information to better manage the business and gain competitive advantages. Activity-based costing is a process where costs are assigned due to the cause and effect relationship between costs and the activities that drive these costs. Moreover, the ABC approach is broadly applicable across the spectrum of company functions and not just in the factory. ABC reveals the links between performing particular activities and the demands those activities make on the organization's resources, so it can give managers a clear picture of how products, brands, customers, facilities, regions, or distribution channels both generate revenues and consume resources. The profitability picture that emerges from the ABC analysis helps managers focus their attention and energy on improving activities. Productivity is critical

for the long-term competitiveness and profitability of organizations. It can be effectively raised if it is managed holistically and systematically. Productivity measurement is a prerequisite for improving productivity. As Peter Drucker, who is widely regarded as the pioneer of modern management theory, said: “Without productivity objectives, a business does not have direction. Without productivity measurement, a business does not have control. Activity-based costing (ABC) is a costing method that assigns overhead and indirect costs to related products and services. This cost accounting method recognizes the relationship between costs, overhead activities, and manufactured products, assigning indirect costs to products less arbitrarily than traditional costing methods. However, some indirect costs—such as management and office staff salaries—are difficult to assign to a product. Generally, ABC costing is used for both B2B and B2C manufacturing and software development. It creates the most accurate cost data when producing products and software, and is used in:

- Customer profitability analysis
- Product line profitability analysis
- Service pricing
- Product costing
- Targeted and predictive costing

Though it's usually manufacturers and developers who use ABC costing, it's useful for any growing business that wants to understand more about the costs they incur to produce their products.

#### **Key Take Aways:**

- Activity-based costing (ABC) is a method of assigning overhead and indirect costs—such as salaries and utilities—to products and services.
- This system of cost accounting is based on activities an activity is any event, unit of work, or task with a specific goal.

- All activities are cost drivers: Purchase orders and machine setups are examples of activities.
- The cost driver rate, which is the cost pool total divided by the cost driver total, is used to calculate the amount of overhead and indirect costs related to a particular activity.
- ABC is used to get a better grasp on costs, allowing companies to form a more appropriate pricing strategy.

#### **Aims and objective of Study:**

With ABC, an organization can soundly estimate the cost elements of entire products and services. That may help inform a company's decision to either. Identify and eliminate those products and services that are unprofitable and lower the prices of those that are overpriced. Or identify and eliminate production or service processes that are ineffective and allocate processing concepts that lead to the very same product at a better yield. In a business organization, the ABC methodology assigns an organizations resource costs through activities to the products and services provided to its customers. ABC is generally used as a tool for understanding product and customer cost and profitability based on the production or performing processes. As such, ABC has predominantly been used to support strategic decisions such as pricing, outsourcing, identification and measurement of process improvement initiatives.

#### **Objectives of Study:**

1. To remove the distortions caused by traditional costing system in direct and indirect costing system
2. That is because activity-based management takes the best attributes of absorption-based.
3. To determine the cost variables.
4. To devise the methodology for optimization of cost.

5. Identify challenges and best practices in implementing ABC in modern manufacturing contexts.

### Research Methodology :

Methodology refers to the theoretical analysis of the methods appropriate to the field of study to the body of methods and principles particular to a bench of knowledge.

**Type of Research:** This is descriptive type by nature.

**Research Design:** The purpose of study is to investigate overall scenarios about activity based costing system.

**Sources of Data:** The report is based on primary and secondary source of information.

1. **Secondary data** has been collected from various sources like different publication, library sources, books, articles, and different websites.
2. **Primary data** collection procedure includes discussion about activity based costing system, observation of practical work of company.

### Literature Review:

**Arora and Raju (2019):** Analyze the factors influencing the ABC systems adoption in India. The size of the organisation, overhead percentage cost, cost audit requirement, and the method of accounting are all statistically important factors in the ABC systems adoption, according to the study.

**Arora and Raju (2017):** The researchers attempted to know the association between size of the organization and ABC adoption. Study found a strong association between the above variables. The study used the total number of employees in the organisation after converting them into log values to determine the size of the organisation.

**John (2014):** Studied the impact of competition on the adoption of the ABC system in 24 Nigerian random selected

manufacturing firms. Researcher found a significant relationship between the competition level and the use of the ABC system. It implies that due to the increase in the competition level firm are motivated to adopt the ABC system.

**Rbaba'h (2013):** The association between firm parameters, such as size of the organisation as assessed by total number of people, product variety as evaluated by the number of items used, degree of overheads, and ABC implementation. According to the findings, there is no substantial link between ABC system adoption and the above-mentioned firm characteristics.

**Elhamma (2012):** The relationship between firm size, performance, and the application of the ABC system was investigated in 62 Moroccan firms. The association between the use of ABC and the firms size is determined using logistic regression analysis. The size and utilisation of the ABC system were found to have a substantial beneficial association, according to the study. The companies who choose ABC saw an improvement in their performance.

**Ahmadzadeh (2011):** Studied 57 Iranian companies to determine the relationship of the following factors: type of the industry, organizational size, the structure of cost, significance of the cost information and product diversification on the uses of the ABC system. The study found cost information importance; the structure of cost is positively associated with the ABC adoption.

**Fei and Isa (2010):** Studied 106 manufacturing firms in China to know the impact of corporate culture and organizational structure on ABC system adoption. Outcome orientation, attention to detail, innovation and team orientation are the factors considered under corporate culture. Centralization and formalization are the factors considered for organizational structure. The study found outcome orientation and formalization as the

statistically significant factors for the ABC system adoption.

**Brierley (2008):** Studied 200 British manufacturing companies to determine the association between the use of the ABC system and four factors i.e., competition level, product customization, cost of the overhead and the size of the firm. The level of competition, product diversity, and manufacturing overhead costs were the factors to be found to have no significant relationship with the use of an activity-based costing system. The study found firm size is related to ABC system adoption in organizations.

### **How Activity-Based Costing (ABC) Works:**

Activity-based costing (ABC) is mostly used in the manufacturing industry. It enhances the reliability of cost data, hence producing nearly true costs and better classifying the costs incurred by the company during its production process. This costing system is used in target costing, product costing, product line profitability analysis, customer profitability analysis, and service pricing. Activity-based costing is used to get a better grasp on costs, allowing companies to form a more appropriate pricing strategy. The formula for activity-based costing is the cost pool total divided by the cost driver, which yields the cost driver rate. The cost driver rate is used in activity-based costing to calculate the amount of overhead and indirect costs related to a particular activity.

### **The ABC calculation is as follows:**

1. Identify all the activities required to create the product.
2. Divide the activities into cost pools, which include all the individual costs related to an activity. Calculate the total overhead of each cost pool.
3. Assign each cost pool activity cost drivers, such as hours or units.

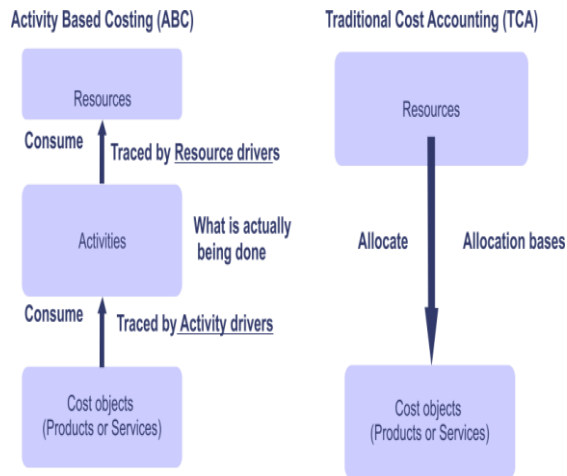
4. Calculate the cost driver rate by dividing the total overhead in each cost pool by the total cost drivers.
5. Multiply the cost driver rate by the number of cost drivers.

### **Requirements for Activity-Based Costing (ABC):**

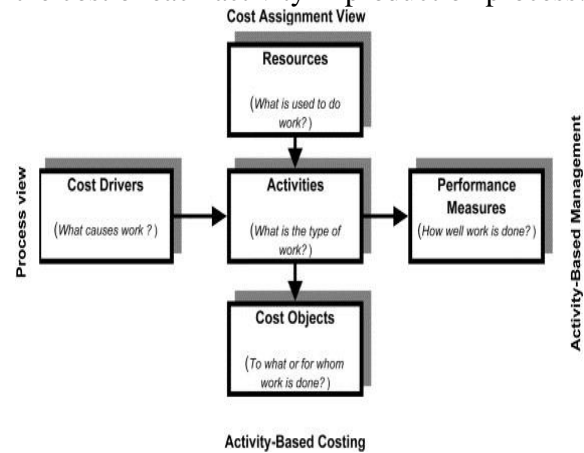
The ABC system of cost accounting is based on activities, which are any events, units of work, or tasks with a specific goal—such as setting up machines for production, designing products, distributing finished goods, or operating machines. Activities consume overhead resources and are considered cost objects. Under the ABC system, an activity can also be considered as any transaction or event that is a cost driver. A cost driver, also known as an activity driver, is used to refer to an allocation base. Examples of cost drivers include machine setups, maintenance requests, consumed power, purchase orders, quality inspections, or production orders. There are two categories of activity measures: transaction drivers, which involve counting how many times an activity occurs, and duration drivers, which measure how long an activity takes to complete. Unlike traditional cost measurement systems that depend on volume count, such as machine hours and/or direct labour hours, to allocate indirect or overhead costs to products, the ABC system classifies five broad levels of activity that are, to a certain extent, unrelated to how many units are produced. These levels include batch-level activity, unit-level activity, customer-level activity, organization-sustaining activity, and product-level activity.

### **Activity based costing v/s Traditional cost accounting system :**

Following images shows that difference between activity based costing and traditional cost accounting methods:



Following image shows that how to ascertain the cost of each activity in production process:



### Benefits of Activity-Based Costing (ABC):

Activity-based costing (ABC) enhances the costing process in three ways. First, it expands the number of cost pools that can be used to assemble overhead costs. Instead of accumulating all costs in one company-wide pool, it pools costs by activity.

Second, it creates new bases for assigning overhead costs to items, so costs are allocated based on the activities that generate costs, instead of on volume measures—such as machine hours or direct labour costs.

Finally, ABC alters the nature of several indirect costs, making costs previously considered indirect—such as depreciation, utilities, or salaries—traceable to certain activities. Alternatively, ABC transfers overhead costs from high-volume products to low-volume products, raising the unit cost of low-volume products.

### Calculation of ABC Costing:

ABC costing is calculated by finding the total cost pool and dividing it by the cost driver. The cost pool is an aggregate of all the costs associated with performing a particular business task, such as making a particular product. Cost drivers are labor hours, machine hours, and customer contacts.

### The Bottom Line:

Activity-based costing (ABC) is a costing method that directly ties all overhead and indirect costs to specific products and services. Activity-based costing recognizes the relationships between costs, overhead activities (all events, tasks, or units of work with a specific purpose), and manufactured products. The goal of activity-based costing is to understand a company's true costs and reduce inefficiencies by identifying the highest cost drivers: the activities and processes that consume most of a company's resources. Recall that the simplest method for estimating factory overhead is to use the same predetermined rate in all departments, for all activities, and for all products in a manufacturing facility. Two amounts must be estimated for the calculation, as follows:

### Total budgeted factory overhead/Total budgeted activity base:

(such as direct labor hours, machine hours, etc.)

**Activity-based costing (ABC)** is a more specific and more accurate way of assigning factory overhead to manufactured goods versus using single factory or departmental rates. An activity is a unit of work that consumes resources when performed by a company. A cost object (in the case of manufacturing, the item



produced) is the target of the activity. Cost objects include products, jobs, services, projects, clients, patients, customers, and contracts.

In a factory, ABC identifies activities within the manufacturing process that occur repeatedly, such as purchasing,

production scheduling, setups, moves, inspections, testing, clean-ups, and invoicing. Each activity has its own activity base to measure usage. The following list matches common activities of a manufacturing company with their respective activity bases.

Accounting reports	Number of accounting reports
Customer return processing	Number of customer returns
Electric power	Kilowatt hours used
Human resources	Number of employees
Inventory control	Number of inventory transactions
Invoice and collecting	Number of customer orders
Machine depreciation	Number of machine hours
Materials handling	Number of material moves
Order shipping	Number of customer orders
Payroll	Number of payroll checks processed
Production control	Number of production orders
Production setup	Number of setups
Purchasing	Number of purchase orders
Quality control	Number of inspections
Sales order processing	Number of sales orders

A factory overhead rate for each routinely-performed activity is calculated by dividing the total budgeted cost amount for the activity for a period by the budgeted activity base quantity over the same time frame. The fraction for each activity is similar to the one used for the predetermined single factory rate, except at a more micro level. There may still be some factory overhead costs that are not associated with any particular activity for the inspection and assembly processes. These may include factory expenses such as utilities, maintenance, insurance, and depreciation. These general overhead costs must be applied to jobs on an estimated (or “budgeted”) basis. In this example, machine hours and direct labor hours will be used as the activity base for cutting and assembly, respectively. Factory overhead amounts for the inspection and assembly processes will

be less than those under the single rate or departmental rate methods since the costs for identifiable activities have already been separated out.

### **Case Study: Implementing Activity-Based Costing in an electronics products and Software Services:**

#### **Background of Company:**

The document provides an overview of Johnson Controls India Pvt. Ltd., a subsidiary of Johnson Controls (Mauritius) Pvt. Ltd., established in 1995. It discusses the company’s engineering design center in Pune, which focuses on electronics products and software services. The document highlights the implementation of Activity Based Costing (ABC) to address issues in traditional financial reporting that failed to accurately reflect profits and losses across products and customers. ABC allows for a

more precise allocation of costs associated with products and services, recognizing the importance of support activities in addition to direct production costs.

Key points include:

- **Reasons for Implementation:** Traditional reporting inadequately captured departmental expenses and customer-related costs.
- **Cost Structure:** The Company incurs significant manpower, IT, and travel costs, with ABC providing a clearer understanding of these expenses.
- **Advantages of ABC:** Improved decision-making, better cost control, and enhanced understanding of business activities.
- **Limitations:** Challenges in implementation, potential for over or under costing, and higher costs associated with maintaining the ABC system.

Overall, the document emphasizes the need for accurate cost information to enhance profitability and operational efficiency.

During the implementation of Activity Based Costing (ABC), Johnson Controls faced several challenges, including:

**1. Selection of Cost Drivers:** Identifying the appropriate cost drivers for various activities was a complex task, as it required a deep understanding of the operations and their associated costs.

**2. Assignment of Common Costs:** There were difficulties in allocating common costs to specific products or services, which could lead to inaccuracies in cost reporting.

**3. Varying Cost Driver Rates:** The variability in cost driver rates added complexity to the costing process, making it challenging to maintain consistency in cost allocation.

**4. Cost of Implementation and Maintenance:** The ABC system was found to be costly to implement and maintain, which posed a financial challenge for the company.

**5. Comparison with Traditional Systems:** Since most companies used traditional costing systems, the differences in costing bases made it difficult to compare financial reports across the industry effectively.

These challenges highlighted the need for careful planning and execution during the implementation of ABC to ensure its effectiveness in providing accurate cost information.

The following information lists a company's three production activities and a fraction for each that is used to determine the activity rate in the right column. The denominator for each fraction is the activity base used. The amounts in the Calculation column are estimates that are given, presumably prepared by management using available company data.

Activity	Fraction	Calculation	Activity Rate
Transport	Budgeted total cost of Transport / Budgeted number of km	4500/900	Rs. 5 per km
Inspections	Budgeted total cost of inspections /Budgeted number of inspections	7500/300	Rs. 25 per inspection
Assembly	Budgeted total general assembly costs/Budgeted direct labor hours	4,500/300	Rs.15 per direct labor hour

The usage amounts of these activities for each job are given in the following table. For each job, the number of times each activity occurs is multiplied by the overhead rate for that activity. The sum

of all the activity costs is the amount of factory overhead applied to the job.

Activity	Activity Rate (calculated above)	Manpower usages	Manpower Costs	Information Technology usages	Information Technology Costs
Inspections	Rs.25 per inspection	140 inspections	Rs.25 x 140 = 3,500	160 inspections	Rs.25 x 160 = 4,000
Transport	Rs. 5 per km	600 Km	Rs.5x 600 = 3000	100 km	Rs. 5 x 300 =1500
Assembly,	Rs.15 per direct labor hour (dlh)	210 dlh	Rs.15 x 210 =3,150	90 dlh	Rs.15 x 90 = 1,350
			Rs. 9,650		Rs.6,850

The journal entry to apply factory overhead of Rs.16,500 (Rs.9,650 +

Rs.6,850) to the two Activities using ABC is as follows:

Account	Debit	Credit	
Work in Process	16,500		▲ <i>Work in Process</i> is an <b>asset</b> (inventory) account that is <b>increasing</b>
Factory Overhead		16,500	▼ <i>Factory Overhead</i> is an <b>expense</b> account that is <b>decreasing</b>

The following information lists a company's three production activities and a fraction for each that is used to determine the activity rate in the right column. The denominator for each fraction is the activity base used. The amounts in the Calculation column are estimates that are given, presumably prepared by management using available company data.

### Results and Benefits:

After implementing Activity Based Costing (ABC), Johnson Controls managed its costs more effectively through several key strategies:

**1. Clearer Cost Structure:** ABC provided managers with a clearer picture of the economics of their operations, allowing them to understand the actual costs associated with each product and service.

**2.Enhanced Decision-Making:** The implementation of ABC aimed to support business decisions by providing sophisticated control over costs, enabling

managers to make informed choices regarding resource allocation and operational efficiency.

**3. Identification of Cost Drivers:** By identifying the actual cost drivers for various activities, the company was able to focus on reducing non-value-adding activities and processes, thus optimizing its cost structure.

**4.Control Over Costs:** The ABC system facilitated better control over costs, directly impacting the profitability of the company. Managers could now pinpoint areas where costs could be reduced or managed more effectively.

**5.Improved Understanding of Activities:** The implementation helped the company gain a better understanding of its activities, processes, services, and products, which contributed to more strategic cost management.

Overall, the ABC approach allowed Johnson Controls to align its cost management strategies with its operational goals,



ultimately leading to improved profitability and efficiency.

### Interpretation of Findings:

The findings of the empirical analysis demonstrate the effectiveness of Activity-Based Costing (ABC) in modern manufacturing enterprises. The comparison between ABC and traditional costing methods reveals significant differences in cost allocations, overhead rates, and profitability measures. Specifically, ABC provides more accurate cost allocations by identifying and allocating overhead costs based on the activities that drive them. This leads to improved profitability measures for products, as seen in the case study where profit margins increased after implementing ABC.

### Implications for Modern Manufacturing Enterprises:

The results of the analysis have several implications for modern manufacturing enterprises. Firstly, ABC enables better decision-making by providing managers with more accurate cost information. This allows companies to optimize their product mix, pricing strategies, and resource allocation, leading to improved profitability and competitiveness. Secondly, ABC enhances performance measurement by enabling companies to track the costs of activities and resources more effectively. This facilitates continuous improvement initiatives and helps companies identify areas for cost reduction and process optimization. Overall, the adoption of ABC can drive efficiency, profitability, and sustainability in modern manufacturing enterprises.

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