

Chapter 4

Cost Systems as a tool of Management Control

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What is a Cost System

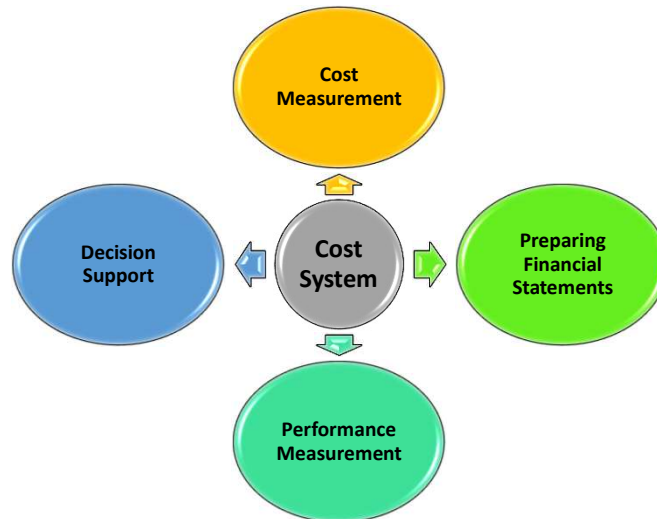
- **Cost System or Costing System**

- A costing system is a framework or methodology used by organizations to allocate and track costs associated with producing goods or services. It involves the systematic recording, analysis, and allocation of expenses to different cost objects, such as products, services, departments, or projects.
- The primary purpose of a costing system is to determine the total cost of production, understand cost behavior, and make informed decisions about pricing, resource allocation, and process improvement.

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What is a Cost System

- **Cost System functions**



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What is a Cost System

- **Cost System functions**

- **Cost Measurement:** Cost systems provide a framework for measuring and tracking the costs associated with producing goods or delivering services. By accurately capturing both direct and indirect costs.
- **Preparing Financial Statements:** Cost systems play a crucial role in preparing financial statements, especially for manufacturing companies. They help in allocating costs to products or services, determining inventory valuations, and calculating the cost of goods sold. This information is essential for accurately reporting financial performance.

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What is a Cost System

- **Cost System functions**

- **Decision Support:** Cost systems provide valuable data for decision-making at various levels of the organization. Managers rely on cost information to evaluate the profitability of products, projects, or customers, identify cost-saving opportunities, and make strategic decisions about resource allocation and pricing strategies. Cost systems help ensure that decisions are based on accurate cost data rather than assumptions or guesswork.

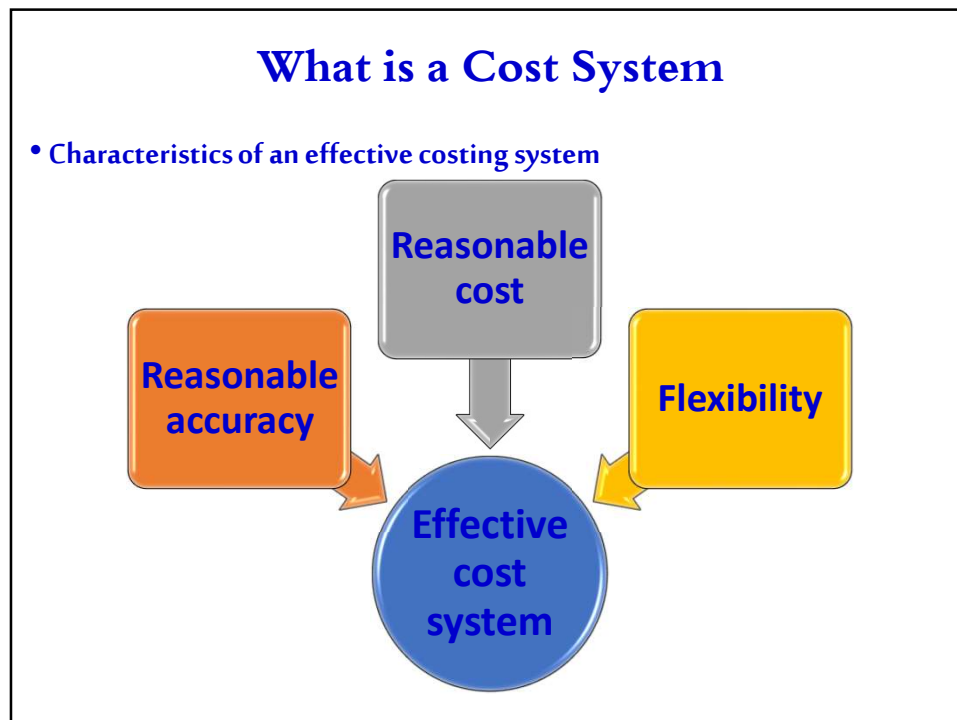
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What is a Cost System

- **Cost System functions**

- **Performance Measurement:** Cost systems enable organizations to monitor and evaluate their performance over time. By comparing actual costs against budgeted or standard costs, managers can assess variances and identify areas of inefficiency or improvement. Performance metrics derived from cost systems, such as cost per unit, cost-to-sales ratio, or return on investment (ROI), provide valuable insights into operational efficiency and profitability.

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What is a Cost System

- Characteristics of an effective costing system
- Flexibility
 - Flexibility enables seamless adaptation to diverse business scenarios. For instance:
 - ✓ Break-even analysis demands delineating fixed and variable costs.
 - ✓ Calculating the comprehensive cost of a product/service entails identifying both direct and indirect costs.
 - ✓ Assessing outsourcing implications necessitates analyzing additional or associated costs incurred from the decision.
 - An effective costing system should effortlessly accommodate these varying cost perspectives, sparing the organization from the need for customized solutions with each new analysis. Instead, it should seamlessly integrate different cost views, ensuring cost information is readily available for specific purposes without requiring extensive reconfiguration.

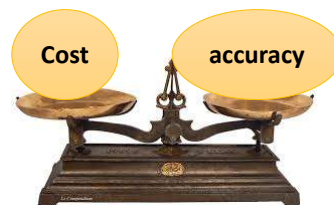
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What is a Cost System

- **Characteristics of an effective costing system**

- **Reasonable cost and reasonable accuracy**

- Reasonable cost and reasonable accuracy strikes a delicate balance between precision and operational expenses. Here's why this equilibrium matters:
 - ✓ Achieving high accuracy in cost determination demands intricate and multi-level measurement processes, driving up operational costs.



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What is a Cost System

- **Characteristics of an effective costing system**

- **Reasonable cost and reasonable accuracy**

- ✓ Conversely, opting for a low-cost system often compromises accuracy, leading to significant distortions in cost figures and magnifying the cost of errors.
- In essence, an effective costing system aligns the organization's need for accuracy with the feasible cost of system operation, ensuring that the benefits of precision outweigh the expenses incurred in maintaining the system.

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Costing Systems

- The role of cost system is to allocate costs of resources on products or cost objects in general.
- To calculate product costs accurately, both direct and indirect expenses need to be allocated to each product.
- While direct expenses can be easily traced back to the specific product, the challenge lies in allocating indirect expenses.

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Costing Systems

- To address the challenge of accurately allocating indirect expenses, various methods have emerged, which we can categorize into three levels of accuracy:
 - **The PLANT-WIDE Overhead Rate or the US method**
 - **The Homogeneous Sections of the French method**
 - **Activity Based Costing**

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Costing Systems

- To address the challenge of accurately allocating indirect expenses, various methods have emerged, which we can categorize into three levels of accuracy:
- لمعالجة مشكل تحميل المصاريف غير المباشرة بشكل دقيق، ظهرت العديد من الطرق سنلخصها بحسب مستوى الدقة إلى ثلاثة طرق:
 - The PLANT-WIDE Overhead Rate or the US method
 - The Homogeneous Sections of the French method
 - Activity Based Costing

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Traditional Costing Systems

- **The PLANT-WIDE Overhead Rate or the US method**
- In this approach, total indirect expenses are divided by a single basis of measurement. This basis could be direct labor hours, or the number of units produced.
- By using a single overhead rate applied uniformly across all products, this method simplifies the allocation process. However, it may not accurately reflect the actual consumption of overhead resources by different products, leading to potential distortions in product costs.

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Traditional Costing Systems

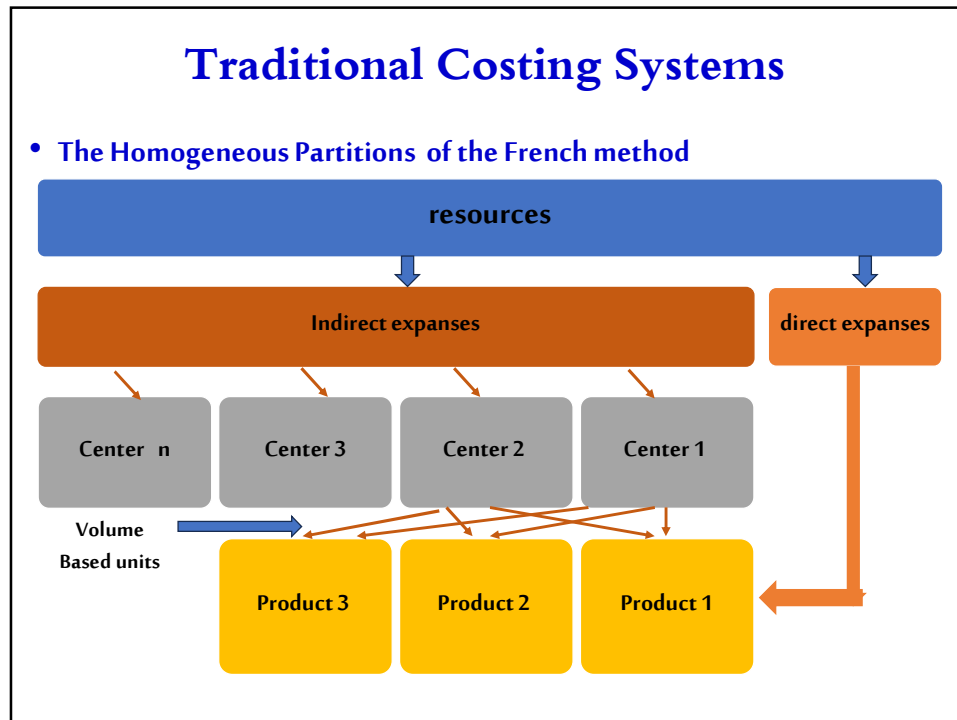
- **The Homogeneous Partitions of the French method**
- **Assumptions of the method:**
- **Emphasis on Finished Products:** The analysis centers method focuses on determining the complete final cost of finished products. Historically, management accounting literature primarily featured various accounting techniques for calculating costs related to finished or semi-finished products.
- **Primacy of Direct Expenses:** Within the expense structure of an organization, direct expenses hold the principal role, while indirect expenses are considered secondary.

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Traditional Costing Systems

- **The Homogeneous Partitions of the French method**
- **Assumptions of the method:**
- **Direct vs. Indirect Expense Allocation:** Direct expenses are directly allocated to products, while indirect expenses are allocated to analysis centers and subsequently distributed across various stages in the calculation of the final product cost.
- **Taylorist Influence:** These assumptions, inspired by Taylorist principles, formed the basis for Raimailho's development of the method of homogeneous sections in 1928.

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Traditional Costing Systems

- **The Homogeneous Partitions of the French method**
- **What Is a Homogeneous Partition**
- Homogeneous partitions refer to distinct segments within an organization, such as management, transportation, or production units, each possessing its unique capabilities, objectives, and measurable activities, along with associated expenses. Key characteristics of homogeneous partitions include:
 - Existing Organizational Segments: These partitions are integral components of the organization's structure, delineated based on functional areas or operational units.
 - Specific Activity and Objective: Each partition is dedicated to performing a particular activity or function and is aligned with specific goals or objectives set by the organization.

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Traditional Costing Systems

- **The Homogeneous Partitions of the French method**
- **What Is a Homogeneous Partition**
 - Homogeneous Activity: The activities conducted within each partition should be homogeneous, contributing to the achievement of its designated purpose.
 - Individual Expense Allocation: Expenses incurred by each partition, are allocated exclusively to that partition, reflecting the costs associated with its activities and operations.

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Traditional Costing Systems

- **The Homogeneous Partitions of the French method**
- **What allocation Base is used**
 - In this method, the allocation base typically used is a measure of the volume of production or the level of activity within each department or analysis center.
 - This could include metrics such as direct labor hours, machine hours, or units produced, depending on the nature of the activity being performed and the relevance of these measures to the allocation of indirect expenses.
 - The choice of allocation base aims to distribute indirect expenses in a manner that reflects the utilization of resources by each department or analysis center.

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Traditional Costing Systems

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Limits of Traditional Costing Systems

Traditional costing systems encountered various challenges at different levels:

- **Environmental Obstacles**
- **Organizational-Level Obstacles**
- **Technical Obstacles**



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Limits of Traditional Costing Systems

- **Environmental Obstacles**
- **Intensified Competition and Globalization:** In today's rapidly evolving global market, the assumption of long-term stability, as proposed by Taylor's management principles, is unrealistic. The intensification of global competition and the trend towards globalization have shattered the notion of a stable operating environment. Organizations must contend with constant market fluctuations and adapt quickly to remain competitive.
- **Rising Uncertainty:** Traditional management accounting systems were designed for environments characterized by certainty. However, in today's complex and dynamic business landscape, uncertainty prevails, making decision-making more challenging for managers. The increasing complexity of the competitive landscape, coupled with advancements in technology and workforce specialization, has rendered Taylor's premise of complete information availability obsolete.

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Limits of Traditional Costing Systems

- **Environmental Obstacles**
- **Technological Advancements:** Information technology has revolutionized business operations, diminishing the significance of direct labor and altering the composition of resource consumption within organizations. As reliance on technology increases, factors such as machine work and energy consumption become more prominent, eroding the dominance of direct labor as the primary controlling factor in resource allocation. This shift necessitates a reevaluation of traditional management principles to align with modern technological realities and resource utilization patterns.

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Limits of Traditional Costing Systems

- **Organizational-Level Obstacles**
- **Evolution of Organizational Structures:**
 - Past: Vertical Division of Enterprises: Traditional organizations were typically structured hierarchically, with clear lines of authority and communication flowing vertically.
 - Present: Emphasis on Horizontal Dimension: Modern organizations are shifting towards flatter structures, emphasizing collaboration and cross-functional teams. This horizontal approach fosters agility and responsiveness to market changes.

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Limits of Traditional Costing Systems

- **Organizational-Level Obstacles**
- **Advancements in Production Systems:**
 - **Increase in Product Diversity:** Today's markets demand a wider range of products tailored to diverse consumer preferences. This necessitates flexible production systems capable of accommodating various product lines.
 - **Complexity of Production Lines:** With the proliferation of product variations, production processes have become more intricate, requiring sophisticated management strategies to optimize efficiency and quality.
 - **Decline of Human Labor:** Automation and technological advancements have reduced reliance on manual labor in production processes. Instead, organizations rely on automation and robotics to enhance productivity and precision.

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Limits of Traditional Costing Systems

- **Technical Obstacles**
- **Department Heterogeneity:**
 - Organizational divisions often group heterogeneous activities based on centers of responsibility or structural considerations. This results in diverse activities being consolidated within departments, characterized by:
 - ✓ Varied Machinery: Departments may contain both simple and complex machines with varying costs and capabilities.
 - ✓ Diverse Labor Costs: The workforce within departments may comprise individuals with different skill levels and qualifications, leading to varying labor costs.
 - Variation in Product Complexity: Departments may handle products of varying complexity levels, with simpler products potentially incurring higher costs than warranted.

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Limits of Traditional Costing Systems

- **Technical Obstacles**
- **Allocation Bases:**
 - Various units are employed to allocate indirect costs, including:
 - ✓ Direct Labor Hours
 - ✓ Quantity Used
 - ✓ Number of Units
 - ✓ Sales Volume
 - Uniform Allocation Assumption: Traditional costing systems often assume that each unit of any product, regardless of complexity, bears an equal share of indirect costs. However, this assumption may not accurately reflect the actual cost incurrence associated with different product types or production processes.

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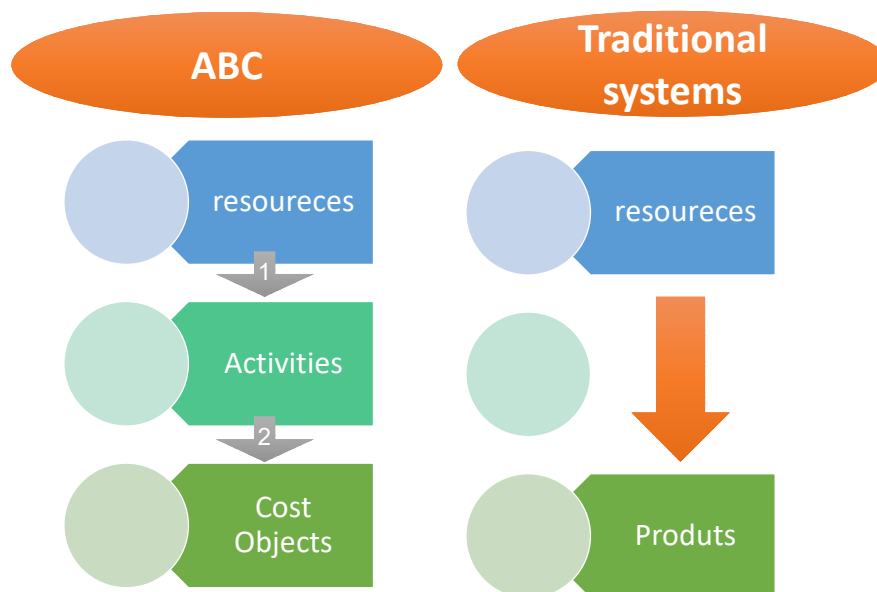
Limits of Traditional Costing Systems

- **The need for alternative cost system**
- An alternative management accounting system must be pursued to address these challenges by:
 - Aligning with the horizontal organizational view and understanding its pathways.
 - Utilizing more homogeneous analysis centers to accurately reflect cost incurrence.
 - Employing more objective loading bases for allocating indirect costs.
 - Enhancing effectiveness in comprehending costs for improved management.

That is why a new cost system has emerged
Activity-Based Costing (ABC)

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Activity Based Costing ABC



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Activity Based Costing ABC

- Origins: The ABC system appeared in the United States after research conducted by:



- Robert S. Kaplan
- Professor at Harvard Business School



- Robin Cooper
- Harvard Business School

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Activity Based Costing ABC

- ABC, or Activity-Based Costing, is a method of cost allocation that operates in two stages. In the initial stage, cost elements are allocated to cost centers, which are activity centers within an organization. In the subsequent stage, these costs are further allocated to products or other cost subjects based on the activities required to produce them.
- The principle underlying ABC is grounded in the notion that products do not directly consume resources; rather, it is the activities associated with producing these products that consume resources. This contrasts with traditional costing systems, which typically allocate costs based on direct consumption by products.
- To determine the cost of products or other cost subjects using ABC, it is essential to identify all the activities involved in their production. Subsequently, the costs of these activities are allocated among the products based on their respective usage of these activities.

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Activity Based Costing ABC

Objectives of the Activity-Based Costing (ABC) system

- **Enhancing fairness and accuracy in cost allocation:** ABC aims to allocate indirect costs more accurately by tracing them to specific activities and then to products based on their actual consumption of resources. This eliminates the randomness and distortion often associated with traditional methods, ensuring that costs are allocated more fairly and transparently across different products or services.
- **Providing decision-making support:** ABC provides managers with detailed and relevant information to support decision-making processes. By identifying the specific activities that drive costs, managers can gain insights into the root causes of high costs within departments or products. This enables them to make informed decisions about resource allocation, pricing strategies, product mix optimization, and process improvements.

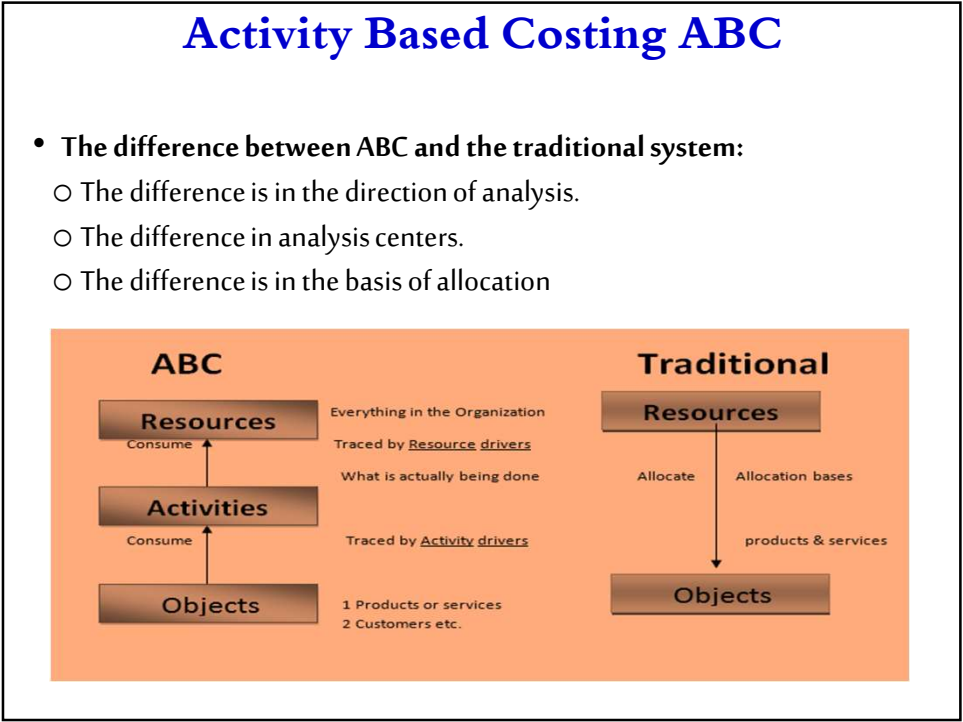
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Activity Based Costing ABC

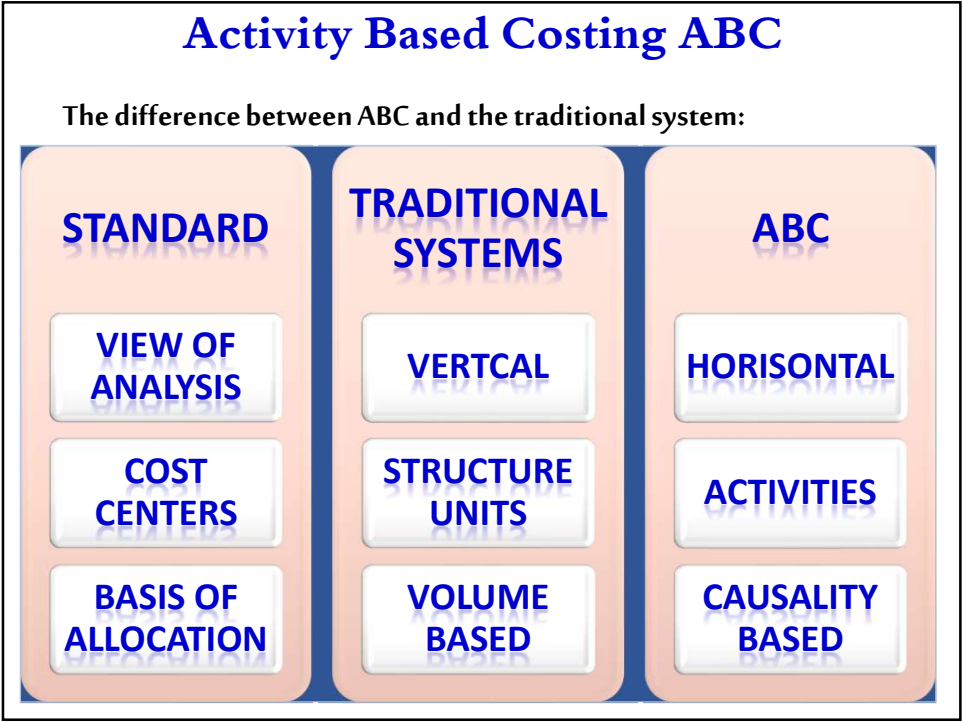
Objectives of the Activity-Based Costing (ABC) system

- **Offering visibility into cost drivers:** The ABC system offers a clear and accurate picture of the activities that drive costs within an organization. By understanding the cost drivers associated with each activity, managers can assess the value-added nature of different activities and prioritize resources accordingly. This visibility enables better resource allocation and cost management decisions.
- **Supporting cost reduction initiatives:** ABC helps organizations identify and eliminate activities that do not add value to products or services, thereby reducing overall costs. By pinpointing non-value-added activities and their associated costs, managers can target areas for improvement, streamline processes, and eliminate waste. This proactive approach to cost reduction enhances efficiency and competitiveness.

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Activity Based Costing ABC

- **The System Components**

- ✓ Task Activity:
- ✓ Process:
- ✓ Cost Driver.



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Activity Based Costing ABC

The System Components

- **Activity:** An activity encompasses all actions within an organization that contribute to its operations. Lorino defines it as a set of primary tasks
 - Performed by individuals or groups,
 - Utilizing specialized skills and exhibiting,
 - Homogeneity in behavior towards cost and performance,
 - Directed towards delivering outputs to internal or external customer,
 - Require various inputs such as labor, machinery, and information.
- Tasks, which cannot be further subdivided, fall under the category of activities and include actions like writing an invoice or lubricating a machine.

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Activity Based Costing ABC

The System Components

- **Process:** A process refers to a sequence of interconnected activities that are driven by a shared cause and guided by a common objective throughout the entirety of the value chain. Processes are characterized by the following:
 - Each process has one overarching goal.
 - Each process has an internal or external customer.
 - Processes cut across the organizational structure horizontally, spanning multiple departments or functions within the organization.

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Activity Based Costing ABC

The System Components

- **Cost Driver:** A cost driver refers to a specific unit of measurement utilized to monitor the behavior of activity costs within an organization. It serves as the connection between the cost of an activity and its consumption by the cost subject, essentially representing the factor responsible for incurring costs.
- The selection of appropriate cost drivers is crucial for accurately allocating costs and understanding the underlying factors influencing expenses.

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Activity Based Costing ABC

The System Components

- **Difference between Cost Driver and Unit of Work (traditional allocation basis):**
- While both concepts involve measurements related to activities within an organization, they differ in their focus and application.
- The unit of work typically relies on statistical relationships and primarily considers size or volume metrics, without necessarily considering causality.
- In contrast, the cost driver is specifically chosen to identify the root cause of costs, aiming to understand why expenses arise. Unlike the unit of work, which may focus solely on quantitative aspects, the cost driver delves deeper into the qualitative factors driving costs.

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Activity Based Costing ABC

- **Stages of establishing the ABC system:**
 1. Activity Identification
 2. Activity Cost Calculation
 3. Cost Driver Selection
 4. Cost Allocation to Cost Objects



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Activity Based Costing ABC

1. Activity Identification

- Identifying activities involves conducting a thorough examination of the institution to understand all activities performed by each department. This process entails consulting experts, conducting fieldwork, and aligning with the organizational structure or pathways of the institution.
- For each activity identified, a detailed card is created containing essential information:
 - Activity name
 - Function
 - Definition of tasks
 - Resources utilized
 - Suppliers
 - Customers
 - Unit of measure or activity driver

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Activity Based Costing ABC

1. Activity Identification

- After defining activities, we compile them into what is known as the Activities Dictionary. With a multitude of activities identified, creating a cost analysis center for each one independently would lead to a complex and costly system. Therefore, we opt to group activities based on several principles:
 - Grouping by processes: Activities with a shared objective are grouped together.
 - Grouping by causal factors: Activities that are influenced by the same factors are grouped.
 - Grouping by hierarchical levels of activities: Activities are organized according to Kaplan.
 - Grouping according to the value chain: Activities are categorized based on their contribution to adding value within the chain of operations.

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Activity Based Costing ABC

2. Activity Cost Calculation

- After establishing the resource costs from financial accounting, the next step is to allocate indirect costs to activities for cost subjects.
- During this stage, it may be evident that some of these costs are directly attributable to specific activities and are therefore directly incurred.
- For instance, consider the salary of a designer engineer who is responsible for designing various products. While this expense represents an indirect cost for the products themselves, it is considered a direct cost of the design activity.

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Activity Based Costing ABC

2. Activity Cost Calculation

- When multiple activities share the consumption of a single resource, the challenge lies in distributing the costs of this resource among these activities. To address this issue, various allocation keys are employed based on the type of resource consumed. Some commonly used allocation keys include:

Resource (production factor)	Distribution key
Employees	Time taken
Technology	Machine working hours
Facilities and buildings	Square meters
energy	Kilowatt-hour Kw/h

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Activity Based Costing ABC

3. Cost Driver Selection

- Selecting cost drivers involves determining the most suitable method to allocate activity costs to cost subjects effectively. This decision-making process revolves around two key aspects:
 - **Determining the required number of drivers:** This entails deciding on the appropriate quantity of cost drivers needed by the system, which is largely influenced by the number of activities identified through the activity analysis process.
 - **Choosing the types of cost drivers in each activity:**
 - ✓ Volume Drivers,
 - ✓ Transaction Drivers,
 - ✓ Duration Drivers.

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Activity Based Costing ABC

4. Cost Allocation to Cost Objects

- This involves several steps to accurately allocate activity costs to the relevant cost objects :
 - **Determine the Number of Cost Drivers:** Assess the number of cost drivers associated with each activity for a given cycle. This involves identifying the specific factors or units of measurement that drive costs within each activity.
 - **Calculate Unitary Cost for Each Cost Driver:** Once the cost drivers are determined, calculate the unitary cost for each driver. This step involves analyzing the total cost incurred by each activity and dividing it by the corresponding quantity of the cost driver.

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Activity Based Costing ABC

4. Cost Allocation to Cost Objects

- This involves several steps to accurately allocate activity costs to the relevant cost subjects:
 - **Distribute Activity Costs:** Allocate the costs of each activity among the cost subjects based on their consumption of the cost drivers associated with that activity. This step requires evaluating the extent to which each cost subject utilizes the resources represented by the cost drivers.
 - **Determine Final Cost of Cost Objects:** After distributing activity costs, determine the final cost of the cost objects by aggregating the costs allocated to them from all relevant activities. This provides a comprehensive understanding of the total cost incurred by each cost object.

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Activity Based Costing ABC

Information provided by the ABC system

- **Vertical View:** This aspect of the system reveals the flow of costs within the organization, tracking the movement of costs from resources to cost subjects. It offers insights into various aspects, including:
 - **Resource Expenditure:** Understanding what resources the organization invests in.
 - **Resource Directives:** How the organization allocates and directs its resources.
 - **Activities and Their Costs:** Identifying the specific activities undertaken by the organization and the associated costs incurred.
 - **Activity Drivers:** Determining the reasons behind why certain activities are performed and their relative importance.
 - **Cost of Cost Subjects:** Examining the costs associated with different cost subjects or products.

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Activity Based Costing ABC

Information provided by the ABC system

- **Vertical View:**
- By analyzing the vertical view of costs, organizations can gain a comprehensive understanding of their resource allocation, expenditure patterns, and the drivers behind their activities. This information enables better decision-making, resource optimization, and cost management strategies.

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Activity Based Costing ABC

Information provided by the ABC system

- **Horizontal View :** This aspect of the ABC system focuses on the paths or processes within the organization. It provides information about activities and their performance, which can be utilized for managing these activities, particularly in terms of cost calculation. This approach gives rise to activity-based management (ABM), where activities are analyzed to identify their root causes and evaluate and manage them accordingly.
- Activity-Based Management (ABM) involves:
 - Analyzing activities to understand their underlying causes.
 - Studying activities to assess their performance and efficiency.
 - Managing activities to optimize processes and resource allocation.

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Activity Based Costing ABC

Information provided by the ABC system

- Additionally, there is a concept known as the **inverse vertical view**, which involves using activity information to forecast costs. This is referred to as Activity-based Budgeting (ABB), where cost projections are based on activity data and performance metrics. By incorporating activity-based information into budgeting processes, organizations can enhance cost forecasting accuracy and align budgets more closely with operational realities.