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# ACTIVITY-BASED COSTING SYSTEM GENERATIONS: A LITERATURE REVIEW

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**Abstract**
Economic units today operate in an industrial environment characterized by complexity and intense competition to create and maintain the fundamental success factors, which are quality, cost, and price, as well as innovation, specifications, and time. Cost is one of the factors in enhancing the competitiveness between companies, so attention must be paid continuously to methods of measuring them accurately and objectively, and this requires transformation from the traditional cost accounting systems that rely on a single basis for charging products with their costs (particularly indirect) to the modern systems that deal with the real and direct cause of the cost occurrence, the activity-based costing system emerged that determined the relationship between activity and cost, but because of the weaknesses that accompanied the application of this system The most important of which is the high cost of applying it, its consumption of a long time and many resources, the interest in the internal causes of cost (the activities necessary for production) and its neglect of the external causes of cost (the specifications that the customer desires in the product), has led some to think about developing the ABC system. The current article aims to trace the path of the ABC system in light of the stages of development of its successive generations by defining the philosophy and steps for applying each generation, while indicating the advantages and disadvantages that appeared when applying those generations.

**Keywords**: ABC activity-based costing system, ABCII specification-based costing system, ABCM activity-based cost management system, TDABC time-oriented activity-based costing system, PFABC performance-based activity-based costing system.

## Introduction

In light of the increase and diversity of products that differ from each other in terms of size, specifications, and degree of complexity in manufacturing activities and processes, using a single basis for charging these products with their indirect industrial costs leads to inaccuracy in determining the cost of these products according to the traditional system for allocating indirect industrial costs. Therefore, it has Cost accounting tended to develop its traditional methods of measurement and control, so the activity-based costing system was appeared, which linked cost to activities as a consumer of resources as a solution to the problem of lack of accurate allocation of indirect costs. It must be noted that most accounting literature has confirmed that the expansion of the development of the first generation represented by the ABC system led to the emergence of the second generation which is the time-driven activity-

based costing system (TDABC) followed by the emergence of the third generation which is the performance-based activity-based costing system PFABC. However, according to It has been seen from previous studies - as far as the researcher knows - that there were attempts to develop an activity-based costing system that preceded the emergence of TDABC and PFABC which are the costing system based on ABCII specifications and the activity-based cost management system ABCM, so they can be counted as generations of the ABC system that preceded the emergence of generations. subsequent to it. In light of the concept of market orientation and focus on the needs and desires of customers to support the competitiveness of the economic unit and attention to external causes of cost such as product specifications, the activity-based costing system expanded to the specifications-based costing system (ABCII) to measure the cost of products by taking into account the product specifications. In order to meet management's information requirements, the activity-based costing-management system (ABC/M) appeared in the early 1990s, which examines processes and production flows to identify activities that add value to the product, thus allowing managers to base their decisions on more accurate information and thus improving the quality of these decisions.

Despite the advantages enjoyed by the activity-based costing system (ABC) and its expansions, many obstacles appeared in practical application. Therefore, Kaplan & Anderson introduced a new system called time-directed activity-based costing (TDABC), which requires estimates of only two indicators. They are the unit cost of the energy used and the time required to perform the activity.

Because of the problems that accompanied the application of the cost system based on time-oriented activity, the most prominent of which is the reliance on time and considering it the only cost vector, in addition to the involvement of the human element in estimating the time required for completion, which is usually far from objectivity, and the management’s need for accurate control information, Namazi presented a general 2009 A new system is the Performance Activity Based Costing (PFABC) system to overcome the shortcomings of the ABC system and the TDABC system. This research is a literature review that aims to analyze the ABCsystem and its successive generation by defining a concept and mechanism of applying each generation, so the following concept will be discussed:

First: Defining the concept of activity-based costing system and the mechanism of its application.

Second: Defining the concept of the cost system based on specifications and the steps for its implementation.

Third: Defining the concept of cost management based on activities and the steps for implementing it.

Fourth: Presenting the concept of a costing system based on time-oriented activities and the mechanism of its application.

Fifth: Explain the concept of the costing system based on performance-based activities and the mechanism of its application.

**First: Defining the concept of activity-based costing system and the mechanism of its application**

**1. Definition of ABC system**

In response to the requirements of the modern manufacturing environment and the necessity of making fundamental modifications in the administrative and accounting systems, the ABC activity-based costing system has emerged as a method based on a new cost philosophy that avoids the shortcomings of traditional cost systems and keeps pace - to some extent - with the modern manufacturing environment and the requirements it imposes which contributes to raise cost accounting to the level it should do in light of these developments and increasing production technologies.

Traditional costing systems use a single cost driver (direct wages or working hours) as a tool for allocating indirect industrial costs, and this may lead to misleading and inaccuracy, as an increased cost may be allocated to one product at the expense of other products, which leads management to incorrect pricing decisions, as where products are being priced whose cost was mistakenly reduced at less than their market prices, so, This company's product finding wide acceptance in the market and the company continues to produce and sell at less than market prices. This causes huge losses in the its resources, and at the same time the products whose cost was mistakenly increased are priced at higher prices from the market it suffers from stagnation, and the company may make wrong strategic decision as a result of this mistake, so the need for an activity-based costing system emerged.

The activity-based costing system is known as the system that corrects other cost accounting systems by focusing on individual activities and considering them as the main cost site (Horngren et. al., 2011). Hilton defined it as a two-stage system for distributing indirect costs, where they are collected in cost pools first and then allocated to services or final products based on cost vectors (Hilton, 2011). The ABC system is also defined as the system that is based on collecting the facility's indirect costs into cost pools to be distributed to the final product by the cost drivers in order to reach a more accurate cost for the final product, which leads to supporting sound administrative decision-making (Youssef and Oda, 2014).

ABC is also defined as a system that measures the cost of performing activities, resources, and cost objects, as it distributes the cost of resources to activities and distributes the cost of activities to cost objects depending on their uses and because of the causal relationship of cost causes to activities, as it is based on the idea of providing products or services requires institutions and that these institutions are based on practicing several activities to achieve its goals, and these activities require resources, and these resources are economic in nature and have a cost.

From the above, it can be said that the ABC system is based on the fact that activities consume resources, and then products consume activities. Under conditions of continuous improvement with the aim of reducing costs, this requires identifying activities that add value and developing them, identifying activities that do not add value and get rid of them, which leads to rationalizing the resource consumption and reducing costs as a result of raising the level of performance efficiency for those activities that add value.

**2. Steps to apply the ABC system**

Applying an activity-based costing system requires following the following steps (Hamdiya, 2011):

A. Expense analysis: The organization's indirect expenses are identified and analyzed and grouped within its cost pools so that the cost pool includes expenses with similar characteristics and properties.

B. Identifying and analyzing activities: This is an essential step on which the success of applying the ABC system depends. It is determined by studying the organization and learning about the nature of work in each department and how operational processes are conducted to determine the activities consuming resources. In the event of a large number of activities, many activities are grouped into one activity center in which the homogeneity of these activities is taken into account.

C. Allocation of indirect expenses to activities: The costs of resources used within a certain period are distributed among the activities with the aim of determining the costs incurred by the institution in order to carry out its various activities. There are resources that can be directly traced to the activities that consumed them, and some of them are expenses that cannot be directly traced, so the cause-effect relationship must be taken into account in its distribution through the use of appropriate cost drivers.

D. Allocating the costs of activities to the outputs: At this stage, the costs of the activities are charged to the outputs according to the need each for the resources consumed in implementing the activity by determining a rate of indirect expenses for each activity using the right cost driver according to the equation:

The rate of charging the cost of the activity (or the cost center) = the total costs of the activity (or the activity center) ÷ the number of units of the appropriate activity trigger

The product/service's share of indirect expenses is being determined according to the following equation:

Indirect expenses per unit of product/service = activity load rate x number of units of the activity trigger for the product or service

E. Determining the cost of outputs: The cost of the product or service is determined by summing its share of indirect expenses and its direct expenses.

**Second: Defining the concept of the cost system based on specifications ABCII and the steps to apply it.**

**1. Definition of the ABCII system**

The ABCII system (costing based on specifications) is one of the proposed systems for measuring product costs based on their specifications and an attempt to determine and measure product costs in a way that works to provide information that helps rationalize management decisions. It was given this name because it relies on product specifications and uses them as a basis for determining and measuring costs. Abdel Aleem, 1994) Specifications mean the general characteristics of tangible and intangible characteristics that distinguish similar products, meet consumer preferences, and create demand for the products (Hansen & Mowen, 2008). The origins of the ABCII system go back to the nineties of the twentieth century, when Bromwich tried in 1990 to develop strategic management accounting by

taking into account the benefits that the product provides to the customer and the extent to which those benefits contribute to achieving competitive advantage. He worked to compare the costs related to the product specifications with what the customer pays for it. The product concluded that management accountants can play an important role in measure the cost of specifications supplied to the customer and preparing regular reports on that (Drury, 2008). There have been many definitions of the ABCII system; it is defined as an approach to measuring cost through allocating costs to activities based on the characteristics and specifications of the commodity (Brimson, 1998). It is also defined as a development of an activity-based cost approach using the cost/benefit analysis approach to the customer's needs, represented by product specifications and information analysis. Related to the costs of additional specifications necessary to obtain those specifications (Barfield et al, 2003) It is known as an approach that uses market research to determine the specifications that the customer desires in the product, analyze the cost of the product according to these specifications, determine the possibility of implementing those specifications with the expected levels of achievement, and determine the customer's benefit for each product specification, with the necessity of dividing the cost into a cost that can be controlled and a cost that cannot be controlled (Al-Jibran, 2011). The ABCII system was also defined as an introduction to determining the cost of the product by dividing the product into specifications that include multiple levels of completion and then measuring the costs of achieving those specifications and the benefits related to them with the aim of providing detailed information useful in the planning and control process (Jassem, 2015). Sorour defined it as the method that determines the costs of products based on analyzing the costs of the product into a series of basic specifications, analyzing these specifications and knowing the costs of adding each specification accurately by knowing the cost of the activities necessary to implement each specification and then determining the cost of the product accurately by collecting the cost of each specification ( Sorour, 2016). As for Al-Janabi, he defined the ABCII system as a method for measuring product costs, dividing it into its main specifications, and then collecting the used resourced with those specifications that are the goal of the cost (Al-Janabi, 2020).

From the above, it can be said that the ABCII system is a development of the ABC system, as it tracks cost elements on the basis of characteristics or specifications, then determines the cost of implementing each specification that the customer desires in the product on the basis of the activities necessary to implement it, where the characteristics or distinctive characteristics of the product represent the focal point for measuring costs, not activities as well in the ABC system.

**2. Steps to apply the ABCII system**

A. Determining the basic specifications of the product: This step requires knowing the beneficiaries of the product and their desires, quick and efficient communicant with them, and anticipating possible changes in the specifications values from the customers' point of view, and modern means of communication help support this step (Nowlis & Simonson, 1991).

B. Determining the activities and processes necessary to implement the established specifications: In this step, the ABC system is used to measure the costs of the levels of completion for each product specification, where the costs of each level are determined in light of the activities directly related to it, as well as the share of this level of joint activities, and this requires identifying a driver. Cost for each activity of the achievement levels for the purpose of using it in determining the total costs of the activities of the achievement levels (Ibrahim, 2004), The identification process is carried out by analyzing the activities related to the value chain with the aim of linking the activities to the events that caused their occurrence and the resources consumed by those activities in order to track the cost and determine the cost of the product with great accuracy (Crosson & Needles, 2011). The researcher likens this step to a value engineering technique that analyzes product activities and classifies them into value-adding activities to be developed and enhanced and non-value-adding activities to be deleted and disposed of, thus reducing the cost of manufacturing the product.

C. Determine the costs of activities necessary to implement the specification: In this step, the resources needed to achieve each product specification are determined as follows (Horngren et al, 2012):

- Determine the level of completion of each specification as cost targets.
- Determine the direct costs for the level of completion of each specification.
- Choosing appropriate allocation bases to allocate indirect costs to the levels of specifications completion.
- Determine the indirect costs associated with each allocation basis.
- Calculating the allocation base unit rate.
- Calculating indirect costs for levels of specifications completion.
- Calculate the total costs of specifications by summing the direct costs and indirect costs of specifications.

D. Determining the cost of the product: Each level of completion for each product specification is considered an independent product. Thus, the cost of the product for a specific level of completion is represented by the sum of the cost of activities that add value to the level of completion and the cost of necessary activities that do not add value, which make up the product specifications at this level of completion. (Al-Mahmoud, 2007).

**Third: Defining the concept of the ABC/M activity-based cost management system and the steps for applying it**

After the traditional cost systems were unable to fulfill the information requirements of management as the information provided by these systems no longer meets the requirements of management in light of the modern business environment characterized by intense competition and lack of resources, therefore, many criticisms were directed at these systems, the most important of which is the distortion of the unit cost of the product, which It was measured on the basis of charging indirect cost items to production units, by using foundations based on estimation and personal judgment, such as the number of direct labor hours, the number of machine hours, or on the basis of the amount of direct labor. Therefore, traditional systems continued to suffer from deficiencies in providing appropriate

information to decision makers. Because the modern era is characterized by advanced technology and electronic information systems and the increase in global competition, which has led companies to search for modern methods that help them excel in their operational processes, diversify their products, improve the quality of products and processes, reduce inventory levels, and train the workforce, thus the activity-based costing system (ABC) emerged which focuses on the causes of cost and assumes that the activities that consume resources are the ones that cause the cost, and that the products consume the activities. Using the ABC system to improve and develop the calculation of the costs of products and production processes requires balancing between two important goals. **The first is**: Producing accurate information about the economics of the costs of production and services for the product, **and the second is** producing information that enables the production engineer and management to understand and use it in design decisions, such as re-engineering processes, excluding activities that do not add value to the product and others (Al-Bashtawi, 2007). Then the interest in the activity-based costing system expanded to adapt Its information is in the service of management, so the activity-based management system (ABM) emerged which is a method that helps management in making decisions by using ABC information (Horngren, 2018). Because the ABC system relies on quantitative financial information and does not provide non-financial information about activities, a two-dimensional model for this system was proposed under the name activity based management system (ABCM) which has two main visions: The cost allocation vision and the process vision, as this system provides some operational and strategic information to make decisions according to these two visions (Moghadam, 2013). The steps and stages of cost management work based on the activity-based costing system have contributed to an expanded and accurate understanding of profits with limited resources. The detailed costs for all aspects of the organization's main and secondary activities, in accordance with the ABC system, enable managers to look at them through the operations axis based on the ABM system and the production axis based on The ABC system, as the ABM system depends on the outputs of the ABC system, providing financial and non-financial information about the activity completed (Gary, 1996).

The ABCM system is defined as the method through which an organization is able to direct, measure and control its goals directed at enhancing its performance through the formulation and use of activity-based performance measurement frameworks, as it is the main mean of resource management, continuous improvement and decision-making(Armstrong, 2002). Visser and Sloooten believe that the ABCM system is a system to manage and control the organization's performance by using activity-based information as it is the primary means of decision support. The ABC system was used for the purpose of collecting cost data. The ABCM system has an important role in rethinking processes in terms of analyzing and designing various institutional processes and activities.

It is a cost accounting system that takes into account the fact that some costs are not related to size, but rather depend on the type and number of activities that must be carried out to manufacture products, and it tries to influence the ABC system in order to control and reduce costs and achieve continuous development of performance (Visser and Sloooten, 2005), while Muhalhal believes The ABCM system is an integration between the operations axis on

which the activity-based management system is based, which depends on the outputs of the ABC system from the cost and production axis for the purpose of providing financial and non-financial information about the activities completed in the organization and measuring the performance of activities by reducing costs and reducing the chances of loss of the organization's resources. (Muhalhal, 2013).

According to the above, it can be said that the ABCM system is one of the management accounting systems that emerged through the overlap of the two systems of activity-based management and activity-based costing to assist management in the decision-making process. It combines the operations axis and the production axis, provides financial and non-financial data, and then identifies the value-adding activities to be developed. Activities that do not add value must be eliminated, thus reducing costs, enhancing product quality, and enhancing the organization's market share.

**2. Steps to apply the ABCM system**

The process of implementing an activity-based cost management system consists of five steps (Micheal et al, 2013):-

A. Identifying resources: Resources represent inputs to activities, without which various activities cannot be performed. It is difficult to analyze and manage activities and determine their cost without identifying the resources used and their cost, as they are a source of cost that occurs when they are used.

B. Identifying activities: Activities represent the core of the system because they are the cause of costs and the event that causes the use of resources. Products and services are viewed as representing of activities that are being implemented and presented to customers in the form of a product or service.

C. Determining the activity cost pools: The cost pool means the group of homogeneous work performed within the activity unit, where the indirect cost elements are grouped in each activity cost pool according to the role it performs, and then the costs of the cost pools are distributed among the products or services according to the activities that were used to accomplish them.

D. Determine the causes: The cost cause is the variable that causes the cost to occur. The greater the degree of connection between the cost causes and the cost pols, the greater the effectiveness of the system.

E. Determining outputs: They express the cost units that consume the services of various activities and can be represented by a product, service, customer, or activity. Thus, the cost units are not chosen for their own sake, but rather to serve administrative decision-making and on the basis of which costs are determined.

**Fourth: The time-driven activity-based costing system (TDABC) and its application mechanism**

**1. The concept of the time-driven activity-based costing system TD- ABC**

Many modern systems have appeared in the field of cost accounting that attempt to develop the cost management system, including the time-driven activity-based costing system. In 2004, Kaplan reviewed the activity-based costing system that he had previously developed

and accepted criticism that the system requires a lot of work and that it is difficult for the company to maintain on it all the time Therefore, in the same year, Kaplan & Anderson introduced the time-driven activity-based costing system as an alternative solution that works to avoid the problems involved in the traditional activity-based costing system (Al-Mashharawi, 2015). The basic philosophy of this system was based on the fact that most of the resources available to the organization possess capabilities and energies that can be easily and accurately measured by the time element, given that the time period is the main reason for the occurrence of the cost of the activity and represents the appropriate unit of measurement that achieves harmony between activities. Accordingly, the TDABC system is known as a model based on From the base to the principles of activity cost accounting, it explains the path of using time equations to track and explain costs on the basis of actual service, which helps management develop pricing policy (Max M, 2007) It is also known as an approach based on the ABC system, but with a difference in reducing implementation costs and its focus on time cost vectors (Al-Shaarani, 2010). Balakrishnan et al believes that the TDABC system is a logical application of the idea that available resources are separated from the consumption of those resources (Balakrishnan et al, 2012), while Guzman et al believes that the TDABC system is a modern approach to cost management that have been designed to reach the cost of the product or service in a more accurate and clear way the ease of applying TDABC requires two things: determining the time needed to perform each activity and the cost of the activity time required to produce the cost target (Guzman et al, 2014) The TDABC system was also known as a technology that contributes to collecting data using time, as it is a major driver of costs, as it estimates the energy required for cost elements through the use of energy cost rates (Ostadi et al, 2018). It is also known as one of the modern systems that have been used in economic institutions to avoid the weaknesses that were directed at the ABC system and enhancing the positives are that it depends primarily on time (Shikosh, 2020) from Najaf. As for Al-Zamili, he defined it as the system that depends on allocating resource costs directly on cost objectives, as easy and quick methods are used, represented by the time vector, to calculate the costs of each activity (Al-Zamili, 2022).

Hence, it can be said that the time-driven activity-based costing system is nothing but a development and modernization of the activity-based costing system based on an analysis of the resources consumed by activities on the basis of the time used for each activity.

**2. Steps to implement the TDABC system**

The steps for applying a costing system based on time-driven activity are represented in six steps: (Everaert et al, 2008), (Dejnega, 2011):-

A. Identify the different resource groups that contribute to the performance of the activity of each department within the company and that implement the cost.

B. Estimating the total cost of production capacity for each group of resources (obtained from the company's trial balance).

C. Estimating the actual energy time for each group of resources for each department within the company (in seconds, minutes, or hours) according to the nature of the service provided, excluding rest times, attendance and departure, meetings, and training hours.

D. Calculate the average unit time cost for each group of resources by dividing the total cost of the resource group by the actual energy capacity of the resources.
E. Determine the time needed for each event within a specific activity for any department in the company based on the various time causes using the appropriate time rates for the activity and event characteristics.
F. Calculate the cost of each event by multiplying the average unit cost of time for each resource by the time required for that event and summing the costs of all activities to arrive at the total cost of the product or service.

**Fifth: The concept of the performance-based activity-based costing system (PFABC) and the mechanism for its applying**

**1. The concept of the performance-based activity-based costing system (PFABC).**

In 2009, Namazi introduced Performance Focused Activity Based Costing system (PFABC) to accountants for removing the most important problem due to TDABC. This system can unite with organization resource programming (ERP) and performance management system to identify activities which is thought to be a key step in ABC and is omitted in TDABC. The principal of this method is to use the estimations in calculating products' costs and services such as estimating the resources needed, overcharge appropriation rate, cost drivers, etc. This needed collecting data with high expenses and also the standard estimations needed in this system will be very difficult. This is the greatest disadvantage of PFABC system (Kowsari, 2013). PFABC is known as a system that serves administrative aspects such as measuring and managing performance and addresses criticisms of the time-driven activity-based costing system and integrates with it to obtain cost information of higher quality and useful in measuring and managing performance (Khattab, 2013). It is also known as a system that works to determine the actual costs of each project. activity separately and with high accuracy, as it takes into account the appropriate cost vector and provides it with flexibility because some activities have vectors other than time, in addition to being a tool for allocating and evaluating performance (Saad et al., 2016). As for Al-Numan, PFABC is defined as a cost system that is distinguished by its accuracy in calculating the cost of one unit of the product and providing the organization's management with accurate information necessary for monitoring, evaluating performance, and improving many decisions (Noman, 2017), Al-Sayyed and others believe that PFABC is a system for determining product cost and measuring and monitoring performance, as it is concerned with cost behavior and allocating resource costs for each activity separately, using multiple resource causes. It provides standards for comparison between actual performance and planned performance for both flexible and binding resources. It also provides standards for measuring the productivity of each activity and its elements: which are efficiency and effectiveness and therefore it is an administrative-oriented system (Al-Sayed et al., 2019), PFABC is also known as a system that combines the features of both ABC and TDABC and works to avoid the shortcomings of both systems, especially in the process of allocating indirect costs to products and services, and provides the necessary indicators of the exploited and unexploited production capacity for each activity and thus contributes to a more fair and

objective determination the cost of the product or service and providing the necessary information to monitor and evaluate performance (Nouri and Hassoun, 2020).

Based on the above, it can be said that PFABC is an administrative cost system that provides financial information that serves the purposes of accurately determining the unit cost of the product and provides non-financial information that serves the purposes of monitoring and evaluating performance, and therefore it is useful for improving the making of many administrative decisions within the organization.

**2. Steps to apply the PFABC system**

The steps for applying a costing system based on performance-based activity are represented in nine steps: (Namazi, 2009) and (Kowsari, 2013): -

A. Identifying the main activities: This step is similar to the first step in the ABC system, but it was overlooked in the TDABC system. This step is important for two reasons. The first is the nature and behavior of the special cost of any activity that differs from the costs of other activities of the same department, and the second reason is that it is the basic element of the ABC system and necessary. To allocate costs to different activities and draw a map of activities on their basis.

B. Determine the actual resources used in each activity: In the PFABC system, employees who manage the activity can determine the type and quantity of resources actually used in each activity based on the behavior of the organization or its information systems, especially accounting information systems, and the resource must have a specific relationship with the cost, which creates a large amount Of flexibility, this step includes determining the behavior of actual resources and their cost, as resources are divided into flexible resources that have variable cost behavior and binding resources that have fixed cost behavior.

C. Determining an actual rate for each activity resource: An actual cost rate for each activity is determined separately on the basis of various reasons, based on information derived from information systems based on actual information and according to the type of resources and their cost behavior.

D. Determining the cost for each activity: The cost for each activity is being determined taking into account the behavior of the cost of resources. When the cost of resources is flexible, the cost of input factors is determined by multiplying the actual resources used in each activity (AR) by the price of the resources used (AP), so the cost of the actual activity = AP × AR.

Flexible resources, such as direct materials and direct labor, can be easily identified as flexible resources as cost behavior changes. As for binding resources, there are five ways to allocate their costs: the flexible cost allocation approach, the cost trigger approach, the weighted average method, the net realizable value and the multiple model decisions).

E. Calculating the standard rate of activity: This step does not exist in both the ABC and TDABC systems, but it is considered a major step in the PFABC system, where the standard rate of activity is being estimated using various methods, including work allocation standards and tools, Market mechanics, internal and external benchmarks, statistical methods for regression analysis and time series models. The standard rate must be calculated accurately

because it is used as a basis for comparison with actual rates. Although this step takes time and cost, it provides a reliable basis for measuring performance.

F. Calculating the price deviation for activities: This step does not exist in the ABC and TDABC systems and to determine the price deviation for flexible resources, the amount of actual resources required by the activity is calculated, multiplied by the standard price for the consumed resources, and then subtracted from the actual cost of the activity. As for the obligated resources, there is no price deviation because it is fixed.

G. Calculating the cost of the implemented activities: The PFABC system focuses precisely on the behavior of the resources consumed, so they are divided into flexible resources and binding resources. The standard quantity of resources consumed to perform the activity must first be determined, which must be determined with the greatest possible degree of accuracy because it will be used as a reference standard for comparison with the actual resources used, and standards can be used work or statistical methods such as regression analysis to calculate the standard quantity. The energy cost of flexible resources implemented for a specific activity is calculated according to the following equation:

Flexible resource energy cost = SP × (AW × SR)

Whereas:

SR = amount of standard resources required

AW = actual time to complete work

SP = Standard price of materials

H. Calculating quantity deviation: This step shows whether the organization's production managers used more resources than the standard quantity to produce goods and services. It actually measures the performance of production managers.

I. Calculating the productivity of each activity: One of the most important pieces of information in the management evaluation process is activity productivity. It does not exist in the ABC and TDABC systems, but it is vital for the PFABC system. Productivity is measured through the following equation:

Productivity = efficiency + effectiveness

**The conclusion**

The current research paper focused on explaining the activity-based costing system and reviewing the generations that followed its appearance, while defining the philosophy of each of these generations and the steps for its application. The research started with ABC activity-based costing system which is based on the fact that activities consume resources and products consume activities, and therefore the cost must be attached to the activities and then Charge the cost of these activities on the products to determine the cost objectively, However, this system has been criticized for several reasons, the most important of which are the high cost of its implementation and long-term consumption, as well as its focus on internal cost causes (activities necessary for production) and its neglect of external cost causes (product specifications desired by the customer). Then we moved on to present the cost system based on the ABCII specifications, which is based on analyzing the product into a series of specifications, the completion of which requires the implementation of many activities that cause the occurrence of the cost. That is the causes of the cost according to the ABCII system

are the distinctive characteristics and properties of the product and not the activities as in the ABC system. Thus, it provides information for product planning and development by linking customer preferences and product cost. After that, the research discussed the activity-based cost management system ABCM which links the cost and production axis based on the ABC system and the operations axis based on the activity-based management system ABM. Thus, it provides accurate determination of the cost of the product through the precise allocation of costs to activities and measuring and evaluating the organization's performance by providing the organization's management with useful information about activities and resource costs as well as improving the process of making appropriate administrative decisions .Then we moved to the time-driven activity-based costing system (TDABC), which relies on the time indicator in measuring cost by estimating the time required for each event within the activity or production department to reach the average cost per unit time of the necessary resources in light of the various time factors. This system is distinguished that it can be easily updated compared to the ABC system, in addition to increasing the accuracy of product cost measurement in light of the presence of a large number of time factors in the various activities of a single product. However, the TDABC system is criticized for its inability to show the direct impact between resources and activities and between activities and final products, in addition to the involvement of the human element in estimating the time required completing the activity. Therefore, the estimate may be far from objectivity. Finally, Costing system based on performance-based activities (PFABC) was presented, which attempted to avoid the defects that appeared in previous systems, which is based on distinguishing between the cost behavior of resources and classifying them into flexible resources similar in behavior to variable costs and binding resources similar in behavior to fixed costs, and thus accurately determining the cost of each activity in addition to its distinction between exploited production capacity and unexploited production capacity. It also provides an effective tool for monitoring and evaluating performance because its application includes determining the actual cost and the standard cost for each activity within the organization and comparing them to determine the deviation of prices and the deviation of quantities for resources.

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