

**The impact of adopting an Activity-Based Cost System to  
maximize profitability**

**(Applied Study in private hospitals in Basrah governorate)**

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**Abstract**

The objective of this study is concerned with clarification of the impact of the adoption of the activity-based costing system in private hospitals in Basrah Governorate because the Activity-based costing system, if adopted, will contribute to reduce the cost of health services. It will also facilitate the measurement of the cost health services and the identification of obstacles that may arise and impede its application in these hospitals. For the purpose of the study, six private hospitals were chosen as study samples; they are (Al-Nour, Ibn Al-Bitar, Saadi, Rahma, Mowasat and Moussawi) for the period from April to July 2018. The researcher conducted a questionnaire survey in the aforesaid hospitals to collect data and information, adopting the descriptive approach in his study to fathom the impact of the adoption of the cost-based system of activity in maximizing profitability of private hospitals. He also used the inductive method to test the hypotheses of the study, distributing (96) forms of questionnaire and (16) regular forms among the study members, who responded to the questions in the questionnaire and the returned forms represented (100%) of distributed forms. He also used the statistical package program (SPSS) to analyze the results that the study reached at, where frequency, percentages, computations, standard deviations, simple regression testing and analysis of mono-variance were also used. The researcher concluded that reduction of expenses and costs of services would positively contribute to the maximization of profitability as considered one of the most important indicators of the measurement of success. The study also came out with the fact that senior management of the private hospitals in question did not believe in the feasibility of implementing the cost-based accounting system because it is very costing or because the management did not have the wish to apply it. However, all participants in the study agreed on the importance of an active cost accounting system in pricing of health services, which in turn leads to maximize profitability because the traditional cost system is unable to

address the allocation of indirect costs of various activities in the performance of private hospitals, and to make proper decisions such as pricing decisions for health services.

**Keywords:** Cost-based activity system, health services, hospitals, increased profitability.

### الملخص

الهدف من هذه الدراسة هو توضيح تأثير تبني نظام التكاليف على أساس النشاط في المستشفيات الخاصة في محافظة البصرة لأن نظام التكاليف على أساس النشاط، إذا تم تبنيه، سوف يساهم في خفض تكلفة الخدمات الصحية. كما أنه سيسهل قياس تكلفة الخدمات الصحية وتحديد العقبات التي قد تنشأ وتعرقل تطبيقها في هذه المستشفيات لغرض الدراسة. تم اختيار ستة مستشفيات خاصة كمعينات للدراسة؛ هم

(النور، ابن البيطار، السعدي، الرحمة، المواساة، الموسوي) للفترة من نيسان إلى حزيران 2018. أجرى الباحث مسحاً استبيانياً في المستشفيات المذكورة لجمع البيانات والمعلومات، واعتماد المنهج الوصفي في دراسته لاستيعاب تأثير تبني نظام النشاط القائم على التكلفة في زيادة ربحية المستشفيات الخاصة. كما استخدم الطريقة الاستقرائية لاختبار فرضيات الدراسة، حيث قام بتوزيع (96) نموذجاً من الاستبيانات بواقع (16) نموذجاً منتظماً لكل عينة الدراسة، الذين أجابوا على الأسئلة الواردة في الاستبيان وكانت الاستمارات المعادة تمثل نسبة (100٪) من النماذج الموزعة. كما استخدم برنامج الحزمة الإحصائية (SPSS) لتحليل النتائج التي توصلت إليها الدراسة، حيث تم استخدام التكرارات والنسب المئوية والمتوسطات الحسابية والانحرافات المعيارية واختبار الانحدار البسيط وتحليل التباين الأحادي. وخلص الباحث إلى أن تخفيض النفقات وتكاليف الخدمات سوف يساهم بشكل إيجابي في تعظيم الربحية باعتبارها واحدة من أهم مؤشرات قياس النجاح. كما توصلت الدراسة إلى حقيقة أن الإدارة العليا للمستشفيات الخاصة المعنية لم تؤمن بجدوى تنفيذ نظام المحاسبة القائم على التكلفة لأنه مكلف للغاية أو لأن الإدارة لم تكن ترغب في تطبيقه. ومع ذلك، اتفق جميع المشاركين في الدراسة على أهمية وجود نظام نشط لحساب التكاليف في تسعير الخدمات الصحية، مما يؤدي بدوره إلى زيادة الربحية لأن نظام التكلفة التقليدي غير قادر على معالجة تخصيص التكاليف غير المباشرة لمختلف الأنشطة في الأداء للمستشفيات الخاصة، واتخاذ القرارات المناسبة مثل قرارات التسعير للخدمات الصحية.

**الكلمات الدالة:** نظام التكاليف القائم على النشاط، الخدمة الصحية، المستشفيات، تعظيم الربحية.

### Introduction

One of the most significant sectors in any country is the health sector for it is closely concerned with the health and lives of people. Therefore, countries have to do their best to provide the best health services for their fellow-citizens, on one hand and to work hard for the reinforcement and development of this sector through carrying out a series of reforms and improvements of the existing health institutions, on the other hand and supply them with the newest medical technologies, technicalities and scientific expertises to improve such services. However, great difficulties

face countries in this respect; they cannot supply this sector with sufficient funds so that it can accomplish its goals. This difficulty primarily stems from either the lack or scarcity of resources. In Iraq and other countries, although the costs of healthcare are much higher than the rise in the allotted health budgets, the health sector witnessed no improvement and this problem should be addressed by working out strategies and mechanisms that would curb the waste of financial resources and maintain an appropriate level of health services at the same time. Although health services are profitable, these institutions still use traditional systems of calculating costs of services in a simplified manner, in a time they should have used the recent modern cost systems that will attain accurate calculation of the cost of services such as the cost-based system of activity, which has widely become applicable in the industrial field and has extended to the services sectors on the activity basis including hospitals.

## **The first section**

### **Methodological framework**

#### **1. Study Problem :**

Hospitals face main challenges in the field of maximization of profitability and maintaining its continuity because of the increased competition in the health services market. As a result, hospitals have to reinforce their competitive position and thus implement their objectives concerned with continual profit and seek ways and methods to lessen the cost of health services provided to patients. Reduction of the indirect costs of health services is considered one of the best approaches to accomplish this goal. Yet, Iraq despite their shortcomings of the traditional cost systems in the domain of the indirect cost distribution mechanism for health services for patients who use them in controlled ways, still uses them, while neglecting the causal relationship in allocating costs. So, to avoid these shortcomings, the activity-based costs system should be used because it can allocate the indirect costs on a precise and planned basis, in a way that enables hospitals to attain two goals. The first is to realize equity in the allocation of those costs to productive activities of health services under cost-sensitive causation or guidelines, and secondly to decrease those costs by eradicating value-added activities within the so-called concept of value chain. The problem of the research can be presented in the form of asking the following questions:-

1. Will the private hospitals in Basrah Governorate face obstacles, if they use the activity-based cost system?
2. Will this system if used in private hospitals in Basrah Governorate contribute to lessen the cost of health services in a way that maximizes profitability?
3. Is there a statistically significant relationship between the use of the activity-based cost system in private hospitals in Basrah governorate and between the types of ownership?
4. Do private hospitals in Basrah Governorate have the necessary capacity and infrastructure to use the cost-based system to measure the cost of health services?

## **2. Study Objectives:**

1. To clarify the importance of the cost-based system of activity in sample hospitals of study.
2. To attempt to answer the questions raised and to verify the validity of the hypotheses presented.
3. To detail knowledge of the activity-based costs system.
4. To determine the basic components of the use of activity-based costing system in maximizing the profitability of sample study hospitals.
5. To determine the obstacles to using of the activity-based costs system in study sample hospitals.

## **3. Study Importance:**

The importance of the study comes from an attempt by the researcher to uncover the opportunities available to adopt the activity-based costs system in the private hospitals in Basrah Governorate and indentify and overcome the obstacles that may confront its application if there are any. Hence the outcomes of the study and the recommendations to be built on them will certainly be a helpful factor for all groups related to those hospitals.

## **4. Study Hypothesis:**

In order to answer the questions raised, this study is based on the following hypotheses, which can be formulated as follows:-

- 1. First hypothesis:** the application of the activity-based costs system in the private hospitals in Basra governorate will face no obstacles.
- 2. Second hypothesis:** The activity-based costing system, if used in private hospitals in Basrah Governorate, does not reduce the cost of health services in a way that maximizes profitability.

**3. Third hypothesis:** There is no statistically significant relationship between the application of the activity-based costs system in private hospitals in Basrah Governorate and the type of ownership.

**4. Fourth hypothesis:** Private hospitals in Basrah Governorate lack the basic infrastructure and capabilities necessary to implement the activity-based cost system in calculating the cost of health services.

### **5. Study Variables:**

Study variables consist of: -

#### **1. Independent variable:**

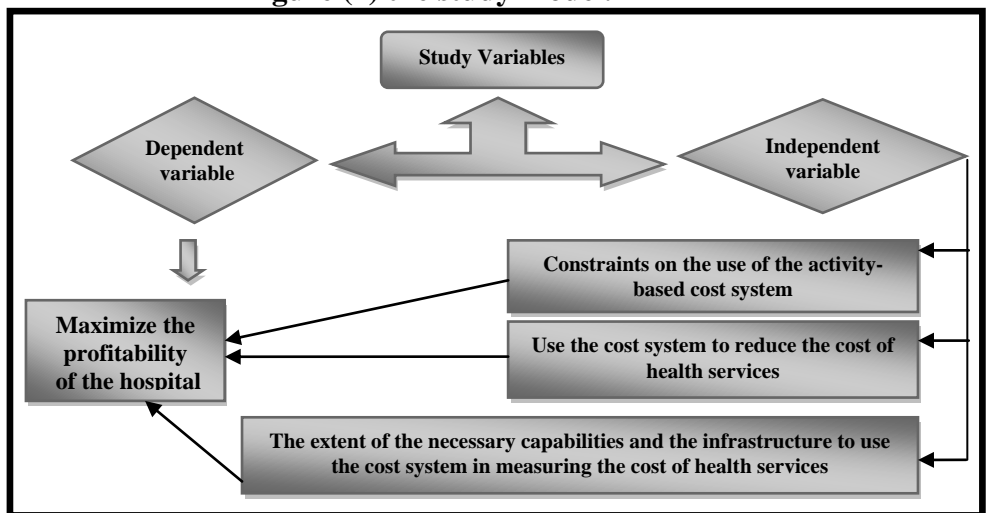
- A.** There are constraints to the use of the activity-based cost system.
- B.** The use of the activity-based costs system is intended to reduce the cost of health services.
- C.** The extent of the necessary capabilities and infrastructure for using the activity-based cost system to measure the cost of health services.

**2. Dependent variable:** Maximize the profitability of the hospital.

### **6. Study Model:**

Building on the study hypotheses, it is possible to explain the variables of the independent study and follow-up in accordance with the following model:

**Figure (1) the study model.**



Source: Prepared by the researcher.

## **7. Method of Study:**

The method adopted by the researcher is applied study including the population study and the sample study as well. It focuses on both theoretical and applied aspects of the study as follows:-

**1. Theoretical Aspect:** The researcher does his best to establish the theoretical framework, based on a variety of sources; foreign references, journals, scientific letters (MS and PhD), various publications, reports and statistics, published researches.

**2. Applied Aspect:** The researcher in this aspect, tries to study samples communities, which includes the followings:-

**A.The study sample Society:** For the purpose of testing the hypotheses of the study, (6) private hospitals were selected in Basrah governorate; they are (AL-Noor, Ibn Al-Bitar,AL- Saadi, AL-Rahma, AL-Mawasat and AL-Moussawi). The study is based on number of beds (50) forms (16) regular forms one for each sample and all questions of the questionnaire (questionnaire) were answered representing 100% of the distributed forms.

## **8. Study Boundaries:**

**1. Time Boundaries:** The time allotted for the study is confined to the period extending from April to July of 2018, which is intended to cover the process of collecting and analyzing data on the impact of adopting the activity-based cost system to maximize profitability.

**2. Place Boundaries:** Private hospitals operating in Basrah governorate.

## **9. Study Tool:**

It is worth mentioning that there are many tools used in the field of scientific research to obtain necessary information and data and here the researcher, in order to achieve the goals and hypotheses of the study, developed and constructed a survey tool for the study to gather information and data on the phenomenon of the subject of the study sample, drawing upon similar previous literature and consulting with experts and expertise in this field, both academic and professional. The survey tool is (questionnaire survey), which consists of two parts: -

**Part One:** It includes data and information about the sample of the study and some information relative to the respondents themselves. It also included information on the sample hospitals (hospital name, number of beds, and type of ownership) as well as information on (scientific qualification, professional certificates and years of experience).

**Second Part:** Paragraphs (1-9) relate to the first hypothesis and paragraphs (10-18) with the second hypothesis and paragraphs (19-21) in the third and paragraphs (22-30) in the fourth hypothesis.

### **10. Trust and stability tool:**

The researcher used the formula of (Cronbach Alpha) to measure the degree of reliability and consistency in the responses of the sample of the study to the questionnaire questions, the extent of internal stability and the degree of reliability of the terms of identification within the equation of its input in advance to the statistical packages program (SPSS). The value of (Alpha) for the sample as a unit and for the questionnaire in general (81.9%) is a percentage indicating a high level of stability of the measuring instrument.

### **11. Research Structure:**

The research was divided into four sections; the first is (The research plan), the second section (The theoretical framework, Foundations and concepts), whereas the third (Applied study, results and discussion), and the fourth section contains (The conclusions, recommendations and references).

### **12. Previous Studies:**

**1. Study of (Grandlich, 2004):** This study is concerned with the way of applying the ABC system in hospitals and explaining its benefits on the basis of decision-making and pricing treatment service. The method of study is case study descriptive analysis method in a hospital in Canada. The administration provides an effective mechanism to determine the costs of the activities with great precision. The implementation of the ABC system in any part of the hospital requires the necessary information to be applied successfully and helps the administration to perform its internal performance correctly.

**2. Study of (Arnaboldi and Lapsley, 2004):** The study dealt with the adoption of the ABC system as the administrative basis for health care organizations for what it contributes to. The study found that the ABC system was able to form an administrative capacity that helped administrators avoid common administrative errors.

**3. Study of (Livens, et.al. 2003):** The study aimed at developing the traditional cost system used in the radiology department of a university hospital in Belgium through the application of ABC. The researchers followed the case study method for field application of the ABC system in the radiology department and the Coopers two stages activity based costing. The study found that the use of the ABC system accurately



calculates the cost of service in the radiology department by controlling indirect costs.

**4. Study of (Forrester,2003):** It dealt with the application of the ABC system in emergency departments in hospitals and its use as a tool to improve the efficiency of performance through the information system which this system is working on. This reflects positively on the competitiveness of the hospital in the labor market, and strategic plans for these departments in the future. To achieve the objectives of the study, it followed the method of case study to apply the (ABC) in the emergency department in one of the American hospitals, where the hospital has the largest number of patients entering this section and concluded the study results, including the system (ABC) required in the emergency department by three hours per day and the implementation of the ABC system has led to a more accurate distribution of activities among emergency department personnel.

**5. Study of (Ramsey, 1994):** This study intended to implement the ABC system in hospitals in order to develop the management methods in the healthcare industry so that a high quality health service and low cost to the largest number of patients can be provided in the long term. The implementation of ABC, as the results of the study showed, helps hospitals design a cost-effective and administrative system that provides financial and non-financial information and provides accurate information on the measurement of costs. The services provided and thus increased accuracy in pricing, recommended the study of the need to apply the system (ABC) in the service sector in general and hospitals in particular.

**6. Study of (Lawson, 1994):** It focused on explaining the importance of the ABC system for hospital management. It also found results, including the number of American hospitals that have a continuously increasing ABC system. In addition, it provided the hospital management with useful information for planning and controlling costs well. And implementing the system helps managers to manage their facilities more efficiently and effectively. ABC also helps in the sustainable improvement of hospital operations, giving the hospital a competitive advantage in the health services market.

## **The second section**

### **(The theoretical framework; Basics and concepts)**

**1-1. Activity-Based Costing System (ABC):** It is the system that corrects the path of other cost accounting systems under its focus on individual activity, making of it the basis for cost (Horngren, 2006, p: 144). ABC



system is defined as the system that depends on the allocation of the resources that benefited from it. The cost of this activity is allocated according to the rate of utilization of these activities (Drury,2002,p:340). It is also known as the system that focuses on cost measurement and deviation analysis until it reaches the acceptable results in a causal relationship between cost and activity (James,2006,p:3). Another definition of ABC is a system that is based on the focus on an activity as a major cost objective. In other words, activities consume resources and products that consume activities. This means switching from the classic concept of allocating indirect costs to products and services to the concept of resource consumption by activities on the basis of more accurate (Johnson,1990,pp:4-7). Figure (2) shows the path of the activity-based costing system.

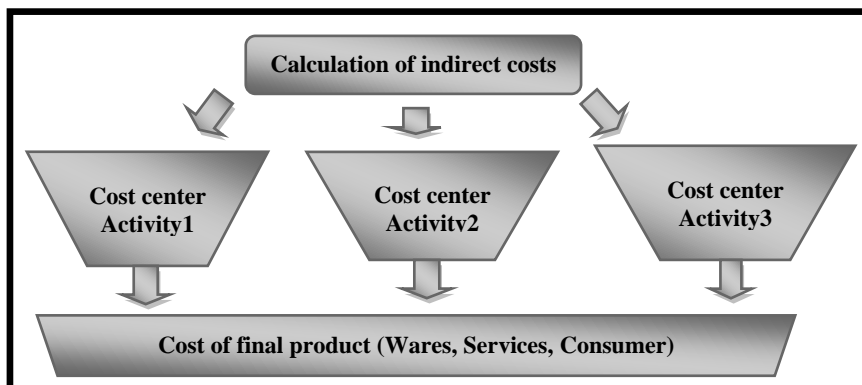
**Figure (2) Shows the path of the Activity Based Costing System (ABC).**



Source: Prepared by the researcher.

From the abovementioned definitions, the researcher has come out with that the activity-based cost system is a system, relying on the collection of the indirect costs of the organization in the cost areas and then is distributed to the final product according to the cost factors and then the real costs of the final product are reached, Figure (3) shows the mechanism used to allocate indirect costs in an activity-based system.

**Figure (3) Shows the mechanism used to allocate indirect costs in an activity-based system (ABC).**



Source: Prepared by the researcher.

**1-2. Advantages and criticisms (defects) of the activity-based cost**

**system**: The activity-based costs system provides highly accurate information on how to use shared resources with different activities. It also has an important advantage: It is a cost-effective administrative and accounting system. It provides two types of information: financial information related to the cost of activities, services and products and information related to these activities. However, the cost-based system has some disadvantages. Table (1) shows the advantages and disadvantages of an activity-based cost system.

**Table (1) shows the advantages and criticisms (defects) of an activity-based cost system.**

Criticism (defects) of the activity-based cost system		Advantages of an activity-based costing system	
1	The ABC system is concerned with long-term strategic decisions, while the organization also needs to make short-term planning and control decisions.	1	The Activity-Based Costing System (ABC) helps to prepare activity-based budgets because it is used as a planning and monitoring tool that helps to evaluate performance.
2	The picture is unclear in the ABC system in terms of clarifying the relationship between activities and consumer satisfaction, because consumer satisfaction is the main objective and common factor among profit-making companies.	2	The ABC system is one of the best methods to improve performance, which is to analysis activities, focus attention on activities that have value and exclude activities that have no value to the product and service and go beyond all the disadvantages of the traditional cost system.
3	The Activity-Based Costing System (ABC) assumes a direct linear relationship between resources and activities and between activities and products.	3	The ABC system is consistent with certain accounting principles, including the principle of interviewing, by not allocating costs for subsequent financial periods to the costs of the current period, which is not avoided in the traditional system.
4	The Activity-Based Costing System (ABC) excludes some costs associated with the production of a particular product of analysis such as after sales service and advertising and marketing, which in turn is negatively reflected after reaching the total cost of the product.	4	The Activity-Based Costing System (ABC) contributes to reducing costs by reducing the effort and time required to carry out any activity, eliminating high-cost and unnecessary activities and focusing on low-cost activities.

5	The use of the ABC system may be inconsistent with accounting principles such as the principle of verifiability and precautionary principle. Each institution should design two systems for internal and external use, which is very costly if it is used for the ABC system.	5	The ABC system plays an important role in control compared with the traditional cost system in the case of allocating indirect costs because it takes into consideration the appropriate time to control activities before the end of the production process, which in turn avoids deviations.
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Source:Grasso,Lawrence, P. *Are ABC and RCA Accounting Systems Compatible With Lean Management? Management Accounting Quarterly*, 7 (1), (2005), pp 12-27.

Based on what has already been said above, the researcher believes that the advantages of using the ABC system, despite the aforementioned shortcomings, generally outweigh the disadvantages that limit its use in order to assist the management in making its decisions on a sound and objective basis. When the administration decides to implement the system, it is necessary to take into account the availability of the components of the application in order to achieve the desired results.

### **1-3. Objectives of the Activity-Based Costing System (ABC):**

The cost accounting system of the activity-based system achieves a set of objectives: - (Michel.M,1997,p:236).

**1.**Providing full measurement of indirect costs on the basis of cause and effect means the causal relationship of costs rather than on the basis of production volume, which helps to make fair management decisions relating to the activity first and associated production secondly.

**2.** Developing the work of the existing departments in the organization because it, by identifying the activities that cause the costs to be controlled effectively, becomes the control of activities and not the control of costs as it was.

**3.**The cost-based cost accounting system helps reduce costs as considered the goal of each organization through careful identification of the activities that increase costs and activities that reduce costs and thus reduce activities that do not add any value to the product, Reduce costs.

**4.** Helping in the evaluation of performance of the organization's activities and employees' by analyzing the activities of the institution and determining the cost guidelines, while helping to establish accurate performance evaluation criteria as well as the financial division of activities.

**5.** Aiming at finding methods and systems not only for indirect costs but also for marketing and administrative costs if appropriate and necessary

resources are available to analyze those costs and to identify the waves and associated activities (*Isra Poul Lsem, 1993, p:34*).

**1-4. Comparison between the activity-based cost system and the traditional cost system:** The most significant differences between the activity-based cost system and the traditional cost system can be determined by a multi-point comparison as shown in table (2).

**Table (2) shows the comparison between the activity-based system and the traditional cost system.**

The differences	Activity-Based Costing System	The system costs traditional
In terms of cost compound	Cost is collected on a cost-basis basis so that each pool includes costs for activities that share the same vector or cost drivers.	Costs are collected at cost centers and are in one homogeneous position and do not belong to a single factor.
In position of cost	A multi-cost position may be the output of operations, payments, or production lines.	All costs are in a single component of the product or service unit in this system.
In terms of application cost	Application costs are high but there is a reason for this, especially for a large, multi-product-based facility that relies on indirect costs in its production.	Application costs are low and are suitable for small enterprises that consist of a simple mix of products.
In terms of analysis method	The method of analysis shall be comprehensive, continuous and accurate of the activities carried out by the establishment in detail.	The analysis is simple and straightforward for costs and not for activities.
In terms of download basis	Costs incurred in the cost factors are borne by the products or services using the activities for those costs.	Costs are charged to products or services using a single load basis, which is the volume of production such as the number of units sold or produced, or direct working hours.

Source: Prepared by the researcher depends on. West, Timothy, D. West, David, A. *Applying*, Healthcare, Management *Accounting*, Vol.78, Issue8, (1999), pp 40 - 48.

**1-5. Uses of the activity-based cost system:** This system is a modern system that has effectively contributed to cost recognition, more accurate measurement, better performance measurement, continuous improvement processes and cost reduction efforts by focusing on the set of activities of the enterprise and tracking the cost of resources consumed by a large group of the cost drivers that affect the size of each resource within each

activity (Mark, 1998, p: 1). That the activity-based cost system fulfills many purposes(Shields,1995,pp:148-166):-

**1.Cost management strategically:** By providing tools that can measure the benefits and costs of investing in new products or markets, as well as providing management support by understanding activities within the enterprise and thereby helping them identify those activities, processes, products, customers, business units that add value and those that run out the value.

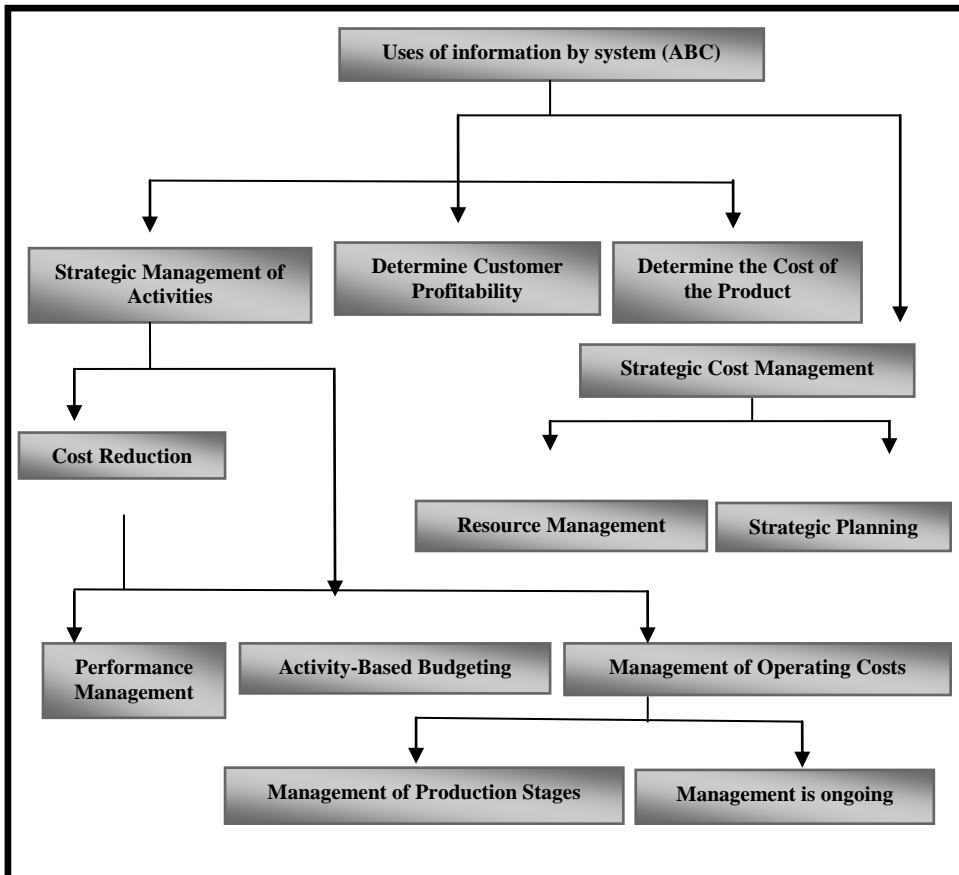
**2.Improved decision making:** By providing information that enables managers at the enterprise to influence the cost in the short and long term and thus improve tactical and strategic decision making.

**3.Determine the cost of products or services:** Is determined as a result of the expansion of the existing cost analysis to examine and study the main cost drivers for the main stages of the business. It is worth noting that the information determined according to the activity-based cost system to determine the cost of products or services is not only applicable to the external market, It can also be applied to internal services, which contribute to a major role in pricing products or services accurately as a result of the fair allocation of indirect costs.

**4.Customer profitability determine:** Using activity-based cost system information as a basis for analyzing customer profitability, the cost of providing a range of products and services to a specific customer or quality of customers is usually based on information about the cost of the product or service.

**5. Improving performance:** Improving performance is the backbone of an activity-based cost system and helps the organization understand customer needs. The uses of information can be illustrated by the activity-based costs system in figure (3).

Figure (3) shows the uses of information according to the system



(ABC).

Source: Prepared by the researcher.

#### **1-6. Requirements for the application of the activity-based costs system:**

Requirements that support and increase the effectiveness of the activity-based costs system can be grouped below :-(*Johnson & Kaplan, 1997, pp:22-30*).

1. Provide an accounting system that enables the provision of necessary and detailed data for the purposes of determining and measuring the relationship between cost and cost drivers.
2. Change in the industrial environment in terms of high technology, leading to an increase in the proportion of indirect costs.
3. Increase the number of production support departments.

4. The high level of market competition leading to the trend to reduce the cost and improve the quality of products.

5. The management is directed to continuous development and adaptation to the new requirements of the market (*PBR,2007,p:1*).

**1-7.The importance of an activity-based costing system in hospitals:**

The continued rise in health care costs is a natural result of the service providers being subjected to pressure from consumers of these services for their desire to receive such care efficiently, with high quality and at a reasonable cost. In order for this sector to achieve its objective of providing health care at a low cost while ensuring the quality of service provided. Taking into account the achievement of a reasonable profit margin, there must be a good operational control system that can be achieved through cost control. (*Ramsey,1994,pp.385-396*) explained that the cost accounting system in the health sector must achieve three objectives represented by effective cost management and enable the organization to maximize its resources through the proper management of the services provided to the auditors and indicate the opportunities for continuous development of operational operations, which the traditional cost systems cannot realize (*Ross, 2004,pp:1-20*). The achievement of these three objectives necessitates the adoption of the Cost-based system in hospitals due to its ability to analyze and understand activities and cost factors (*James,1995,p.50*). The most important aspect of hospital work in the services sector is the provision of many interrelated services that are connected to the establishment as a whole, which increases the indirect costs of this type of service facility. Given the hospitals' privacy in the business environment, health care for patients, where the cost of providing such care is secondary, takes into account the human factors associated with patient health and the cost of available resources and how to use them to ensure the sustainability of the enterprise and strengthen its ability to continue to provide health care services. The researcher found that the outcome of the introduction of the cost-based approach to activity in many specialist hospitals in North America and the United Kingdom in the mid-1980s helped to correct the cost of one day of patient's stay because this approach helped develop the cost system, reflecting all activities required to provide the service. The approach also helped identify and correct the most important areas of arbitrariness and inaccuracies in traditional allocation procedures for indirect costs(*King,1994,pp.3-44*).



**1-8. Designing the model of cost-based accounting system for private hospitals operating in Iraq:**

The process of designing an activity-based cost accounting model is mainly represented by the identification of the components of this model and the understanding of the work environment within the enterprise in terms of the flow of information from the beginning to the end of the business and before beginning the process of defining elements of the cost-based accounting model in private hospitals operating in Iraq. First of all, it is necessary to identify the characteristics of these hospitals and how they work to provide health care services and what type of services they provide, and what the cost systems they use. The researcher, on his part, made some field visits to these hospitals to investigate the situation and procedure. He also carried out some interviews with the staff in these hospitals.

As a result, he has become able to identify some of the characteristics of these hospitals as outlined below:-

**1.**Some of these hospitals are specialized in a certain type of service provided to the patient such as eye hospitals, women and obstetrics, heart and surgery.

**2.**Most of these hospitals include various departments that perform various medical activities such as internal medicine, ophthalmology, orthopedics, gynecology and others.

**3.**Differential capacity of hospitals in terms of their ability to deal with patients from hospital to another hospital.

**4.**Some private hospitals operating in Iraq were established on the basis of profit-making companies through the provision of health care services to their auditors.

**5.**Some of these hospitals do not prepare discretionary budgets for their operations.

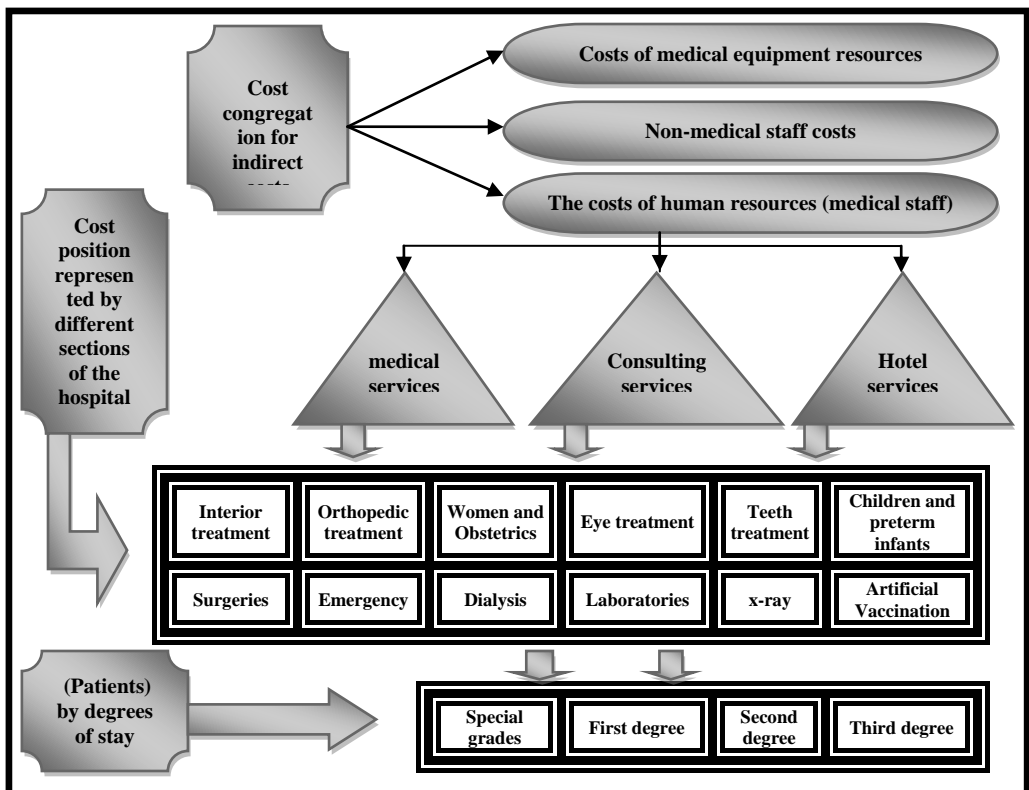
After having identified the characteristics of the private hospitals operating in Iraq, the researcher was able to develop a proposed system to implement the cost-based accounting system as illustrated in figure (6). The proposed system can be summarized by relying on the quality of medical services provided in private hospitals and its three main sources:-

**1.Costs of medical equipment resources:** it is represented by hospital assets such as consumable and non-consumable medical equipment used in the provision of health care services.

**2. Non-medical staff costs:** administrative, financia

**3. The costs of human resources (medical personnel):** represented by doctors, nurses and specialists.

Figure (6) shows the proposed model for the application of the activity-based costs system in private hospitals in Basrah.



Source: Prepared by the researcher.

### The third section

#### Applied Study (Results and Discussion)

The third section is concerned with the presentation of the results, the researcher has obtained out of the statistical analysis of the results of his applied study, noting that during the survey questionnaire, he consulted with some well-experienced experts and specialists in the field of accounting in general and hospitals accounting in particular so that he could gather information as much as possible. This gathered information enabled him to understand the mechanism of work in the hospital sector and made his study scientifically valuable and credible. The results of the study will be presented and analyzed in terms of the type of ownership, the number of beds in the hospital, the scientific qualification and the scientific specialization, and the number of years of experience as shown in table (3). The (Likert Scale) (5 scale) was adopted to determine the

degree of relative importance of each item of questionnaire as shown in table (4). With the adoption of the mean median of (3) degrees to be the limit in the interpretation of the results and was also an ordinal scale of these figures to give the mean of the calculation using the ordinal scale of importance and to return mechanism when analysis of the results as shown in table (5).

**Table (3) shows the personal characteristics of the sample members of the study.**

Characteristics	Category	Repetition	Percentage (%)
Ownership Type	Limited liability	36	63,16
	Public contribution	6	10,53
	Other	18	26,32
Number of beds in hospital	From 50 to 100	36	63,16
	From 101 to 200	15	26,32
	More than 201	6	10,53
Academic qualification	Postgraduate	15	25
	Diploma degree	11	18,33
	Bachelor's degree	34	56,67
Scientific specialization	Accounting	32	53,33
	Administration	17	28,33
	Finance and Banking	8	13,33
	Economics	3	5
Years of Experience	Less than 5 years	25	41,67
	Of 5 and less than 10 years	25	41,67
	More than 10 years	10	16,67

Source: Preparation of the researcher based on the program (SPSS).

**Table (4) Shows the relative importance of Likert Scale.**

Importance	Strongly Disagree	Not Agree	Neutral	Agree	Strongly Agree
Grade	1	2	3	4	5

Source: Prepared by the researcher.

Table (5) Shows the measure of the relative importance of the arithmetic mean.

Arithmetic mean	less than 2-1	less than 3-2	Less than 3.75-3	less than 4.5-3.75	5-4.50
Importance	Very weak level	Weak level	Average level	High level	Very high level

Source: Prepared by the researcher.

### **View Hypothesis Results**

**View the results of the first hypothesis:** Table (6) shows the arithmetical averages and standard deviations of the extent of obstacles in the private hospitals in Basra governorate to implement the activity-based accounting system.

Table (6) shows the arithmetic averages, the standard deviations and the importance of the paragraph for the first hypothesis.

Number	Details	Arithmetic Average	Standard Deviation	Order Importance	Relative Importance
1	Pricing of hospital health services is based on economic factors (supply, demand and competition) rather than the cost of service.	2.73	1.16	9	Weak
2	Employees in a department or cost management are not eligible to apply the activity-based costs system.	2.81	1.24	6	Weak
3	Hospital management is not convinced of the feasibility of applying an activity-based costing system.	3.71	1.16	1	Average
4	The application of the cost-based system is expensive and the resulting benefit is less than the cost of its application.	2.92	1.39	4	Weak
5	Cost centers in the hospital are not precisely defined for the appropriate application of the cost-based system of activity.	2.78	1.38	8	Weak
6	Not involving the concerned hospital staff at all levels of management in the policy of pricing services prevents the application of the system of costs based on activity.	3.03	1.25	3	Average
7	It is not possible to divide the productive activities of health services in the hospital into what adds benefit to the patient and from which it does not add benefit.	2.85	1.49	5	Weak
8	The level of salaries of the financial staff in the hospital prevents the application of the system of costs based on the activity for the time needed and investment in	3.39	1.33	2	Average

	work.				
9	It is difficult to divide the costs of the health service provided to the patient directly and indirectly.	2.80	1.27	7	Weak
Arithmetic mean and general standard deviation		3.00	0.78		

Source: Preparation of the researcher based on the program (SPSS).

Table (6) indicates the answers of the sample of the study sample on the paragraphs related to the first hypothesis. The third paragraph is in the first order of significance with an average of (3.71) which is higher than the general arithmetic average (3) and a standard deviation (1.16). While the second rank was paragraph eighth with an arithmetic average (3.39) higher than the general arithmetic average (3) and a standard deviation (1.33). The sixth paragraph ranked third in terms of importance with an average of (3.03) higher than the general arithmetic average (3) and a standard deviation (1.25). The rest of the hypotheses had an average of (2.73 / 2.92) all below the total arithmetic average. In general, Table (6) shows the difference in the sample responses, which is reflected by the relative increase in the standard deviation of the sample responses as a unit. The frequency the sample and the average level of the importance of using the activity-based cost accounting system to reduce the cost of health services, for all respondents (3.00).

**2-1. View the results of the second hypothesis:** Table (7) shows the contribution of the activity-based cost system to private hospitals in Basrah governorate to reduce the cost of health services in a way that maximizes profitability.

**Table (7) shows the arithmetic averages, standard deviations and the Importance of the paragraph for the second hypothesis.**

Number	Details	Arithmetic Average	Standard Deviation	Order Importance	Relative Importance
10	Divide the total cost of the health service directly and indirectly improves the accuracy of measuring that cost.	4.28	0.76	2	High
11	The health service provided to the patient is divided into sub-activities to facilitate the determination of the cost of the health service provided to him.	4.07	0.84	7	High
12	The ability to identify unutilized costs does not add value to the health care services provided.	3.88	1.12	8	High

13	Additional costs (indirect costs of health services) constitute an important part of the cost of the health service provided to the patient.	4.20	0.75	6	High
14	One of the most important obstacles to determining the exact cost of the health service to the patient is to determine his share of the additional costs of the health service.	4.25	0.65	4	High
15	There is considerable competition between private hospitals operating in Iraq in their quest to attract customers.	4.68	0.75	1	Very high
16	The causal relationship between the elements of indirect costs of health services and the activities they cause leads to the elimination of activities that do not add value or benefit to the patient.	4.23	0.83	5	High
17	The cost accounting system for activities enables better pricing of treatment services.	4.84	0.78	2	High
18	The existence of multiple rules or guidelines to allocate indirect costs to the health service leads to a precise measurement of the cost of that service.	4.27	0.71	3	High
Arithmetic mean and general standard deviation		4.23	0.28		

Source: Preparation of the researcher based on the program (SPSS).

Table (7) indicates to the answers of the sample of the study sample for the second hypothesis. The first paragraph in terms of importance is paragraph fifteenth with an average of (4.68) higher than the general mean (4.23) and a standard deviation (0.57). This indicates that the study sample is aware of the high competitive situation, which increases its interest in using methods that reduce the cost of health services to maximize profitability, which is therefore evidence of the importance of using the activity-based cost system. While the tenth and seventeenth paragraphs ranked second in terms of importance, And standard deviation (0.76) and (0.78) respectively. Accordingly, the authorities, which are responsible for the pricing of health services are convinced of the usefulness of using the activity-based cost accounting system to divide the costs of these services directly and indirectly and then use the cost, which resulted in a more accurate measurement of the cost of health services, thus improving the efficiency of their pricing. The 18th paragraph ranked third in terms of importance with an average of (4.27) higher than the general mean of (4.23) and a standard deviation of (0.71) . The fourth paragraph ranked fourth in terms of importance with an average of (4.25) higher than the general mean (4.23) and a standard

deviation (0.65). The 16th paragraph ranked fifth in terms of importance with an average of (4.32) higher than the general mean (4.23) and a standard deviation (0.83). The rest of the paragraphs of the hypothesis had an average of (3.88 /4.20) all below the general arithmetic average. In general, Table (7) illustrates the responses of the sample, which are reflected by the relative decrease in the standard deviation of the sample responses as one unit, and the high level of the importance of using the cost accounting system to reduce the cost of health services in order to maximize profitability (4.23). As for the questions of maximizing profitability, the responses of the sample members were as shown in table (8).

**Table (8) shows the statistic averages and standard deviations to maximize profitability from the point of view of the study sample.**

Number	Details	Arithmetic Average	Standard Deviation	Order Importance	Relative Importance
19	The application and cost-effectiveness of the activity-based cost system results in maximization of profitability	3.05	1.46	3	Average
20	The success of the hospital in reducing the cost of the patient's health service contributes to improving its competitive position and thus maximizing profitability.	4.55	0.62	1	Very high
21	Non-value added activities are abandoned using an activity-based costing system that maximizes profitability	3.97	0.97	2	High
Arithmetic mean and general standard deviation		3.86	1.02		

Source: Preparation of the researcher based on the program (SPSS).

Table (8) indicates the answers of the sample of the study sample on the phrases related to maximizing profitability. Paragraph twenty came first in terms of importance with an average of (4.55) which is higher than the general mean (3.86) and a standard deviation (0.62). While the twenty-first paragraph ranked second in terms of importance with an arithmetic average (3.97) higher than the general arithmetic average (3.86) and a standard deviation (0.97). The 19th paragraph ranked third in terms of importance with an average of (3.05) which is lower than the general mean (3.86) and a standard deviation (1.46).

**1-3. View the results of the fourth hypothesis:** Table (9) shows the arithmetic mean and the standard deviation of the availability of



infrastructure and the potential for applying the activity-based cost system to the measurement of the cost of health services.

**Table (9) shows the arithmetic averages, the standard deviations and the importance of the paragraph for the fourth hypothesis.**

Number	Details	Arithmetic Average	Standard Deviation	Order Importance	Relative Importance
22	Is there a cost management section or manual for cost centers or cost centers associated with activities that provide health services to patients in the hospital?	3.33	1.07	9	Average
23	That the applicable mechanism of action is imposed by the management of the hospital in such a way that methods can be developed to calculate the cost.	4.37	0.84	1	High
24	Does the management of the hospital determine the price of the health service provided to the patients by adding a certain margin to the cost of the health service provided to him?	4.13	1.07	2	High
25	Does the hospital have a specialized department to monitor the quality of health services provided to patients?	3.83	0.98	5	High
26	Health service costs to patients are categorized as direct and indirect costs.	3.53	1.26	8	Average
27	Does the hospital have a specialized department or department to determine the cost of the health service provided to patients?	3.97	1.04	4	High
28	Hospital health services are subject to re-engineering from time to time until services that do not benefit the patient are eliminated.	4.10	0.90	3	High
29	Indirect costs are used to load multiple load rates that take into account the causal relationship between those costs and the activities that cause them.	3.72	1.12	7	Average
30	The price of the health service provided to patients is determined by supply and demand factors rather than at cost.	3.78	1.09	6	High
Arithmetic mean and general standard deviation		3.86	0.54		

Source: Preparation of the researcher based on the program (SPSS).

Table (9) indicates the answers of the sample of the study sample for the terms related to the fourth hypothesis. The third paragraph in terms of the importance of paragraph twenty-third with an average of (4.37) and higher than the general mean (3.86) and standard deviation (0.84). This explains the conviction of the sample of the study to the need to use modern tools and methods to measure the cost of services provided. While the fourth paragraph ranked second in terms of importance with a mean (4.13), higher than the general mean (3.86) and a standard deviation (1.07). The twenty-eighth paragraph ranked third in terms of importance with an average of (4.10) higher than the general mean (3.86) and a standard deviation (0.90). The 27th paragraph ranked fourth in terms of importance with an average of (3.97) higher than the general mean (3.86) and a standard deviation (1.04). In general, Table (9) indicates the responses of the sample members. The relative decrease in the standard deviation of the eye responses as a single unit, and also the conviction of the sample members of a high level of importance the use of an activity-based cost accounting system to reduce the cost of the health service in order to maximize profitability, with the mean of all respondents (3.86).

### **Verification the assumptions**

#### **2-1. Verification out the first hypothesis:**

**H0** (There are no obstacles in the private hospitals in Basrah governorate to implement the activity-based costs system).

**H1** (There are obstacles in the private hospitals in Basrah governorate to implement the activity-based costs system).

**Table (10) Simple regression analysis of the first hypothesis.**

Details	R	R <sup>2</sup>	B	F	Sig
Obstacles to the application of the activity-based cost system.	0.424	0.180	0.922	12.475	0.001

Source: Preparation of the researcher based on the program (SPSS).

Table (10) indicates the results of the statistical analysis of the presence of obstacles in the private hospitals in Basrah governorate to implement the activity-based costing system. The correlation coefficient (0.424) and the determination coefficient (0.180), meaning that the value of (0.180) and the value of the effect is (0.922). This means that the increase in the constraints of the application of the activity-based cost system leads to an increase in the cost of (0.922). The significance of these constraints confirms the calculated value of (F), which reached (12.475), which is a function at ( $0.05 \geq \alpha$ ). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. This is due to the lack of involvement

of hospital staff at all levels of management in the price policy for health services, as well as the inadequacy of salaries paid to employees of hospital accounts, as well as the failure of the management of hospitals the feasibility of applying the system of costs based on activity.

## **2-2. Verification the second hypothesis:**

**H0** (The cost-based system, if used in private hospitals in Basrah, does not

reduce the cost of health services in a way that maximizes profitability).

**H1** (The activity-based costs system, if used in private hospitals in Basrah governorate, reduces the cost of health services in a way that maximizes profitability).

**Table (11) Simple regression analysis of the second hypothesis.**

Details	R	R <sup>2</sup>	B	F	Sig
The contribution of the activity-based cost system to reducing the cost of health services.	0.516	0.266	1.891	7.617	0.012

Source: Preparation of the researcher based on the program (SPSS).

Table (11) indicates the results of the statistical analysis. There is a statistically significant contribution to the activity-based cost system by reducing the cost of health services. This results in maximizing profitability. The coefficient of correlation (0.516) and coefficient of determination (0.266) reducing the cost of health services in a way that maximizes profitability resulting from changes in the activity-based cost system. The value of the impact was (1,891). This means that the increase in the value of one in the dependence on the system of costs based on activity leads to an increase in the reduction of the cost of health services and in a way to maximize profitability by (1,891). The significance of this contribution confirms the value of (F) calculated at (7.617), which is a function at the level ( $0.05 \geq \alpha$ ). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. This is because the cost of health services is divided directly and indirectly, thus improving the accuracy of the cost of health services based on the causal relationship and thus eliminating the additional costs that do not add value to the service. By implementing this system, hospitals will be able to avoid the obstacles they face in accurately determining the patient's share of the additional costs of the health service, as well as competing with each other to attract customers leads to higher revenues and helps the application of this system to determine the prices of treatment services better.

### 3-2. Verification the third hypothesis:

**H0** (There is no statistically significant relationship between the application of the activity-based cost system in private hospitals in Basrah governorate and the type of ownership).

**H1** (There is a statistically significant relationship between the application of the activity-based cost system in private hospitals in Basrah governorate and the type of ownership). To verify this hypothesis (One Way Anova) was used to detect whether there was a difference in the application of the activity-based cost system according to the different type of ownership as shows in table (12).

**Table (12) shows the arithmetic averages and standard deviations of the application of the activity-based cost system according to the different type of ownership.**

Ownership Type	Limited liability		Public contribution		Other	
Application of the activity-based costs system.	Standard Deviation	Arithmetic Average	Standard Deviation	Arithmetic Average	Standard Deviation	Arithmetic Average
	0.34	3.65	0.36	3.75	0.50	3.69

Source: Preparation of the researcher based on the program (SPSS).

Table (12) indicates that the highest calculation averages for the application of the activity-based cost system were for the type of ownership (public contribution) hospitals. To find out the significance of this difference in the application of the activity-based cost system by ownership, the (One Way Anova) test was as shown in table (13).

**Table (13) shows the results of the (One Way Anova) analysis to indicate the difference between the averages of the application of the activity-based cost system according to the different type of ownership.**

Source of Contrast	Sum of squares(SS)	Mean squares (MS)	Degree of freedom(DF)	Value (F)	Sig
Between Groups	0.053	0.027	2	0.178	0.837
Within Groups	8.106	0.150	54		
Total	8.159		56		

Source: Preparation of the researcher based on the program (SPSS).

Table (13) indicates the results based on the absence of a statistically significant difference at the level of ( $\text{Alpha} \leq 0.05$ ) in the application of the hospital-based costing system. This is due to the change in the type of ownership where the value of statistical analysis (F) ( $\text{Alpha} \leq 0.05$ ) with a value of (0.178) which is not significant at the level of significance ( $\text{Alpha} \leq 0.05$ ). Therefore the null hypothesis is accepted.

**2-4. Verification the fourth hypothesis:**

**H0** (Private hospitals in Basrah governorate do not have the necessary infrastructure and capabilities to apply the cost-based system of activity in measuring the cost of health services).

**H1** (Private hospitals in Basrah governorate have the infrastructure and capabilities to apply the cost-based system to measure the cost of health services).

**Table (14) Simple regression analysis of the fourth hypothesis.**

Details	R	R <sup>2</sup>	B	F	Sig
Private hospitals have the necessary infrastructure and capabilities to implement a system for measuring the cost of health services.	0.314	0.098	1.798	6.224	1.016

Source: Preparation of the researcher based on the program (SPSS).

Table (14) indicates the results of the statistical analysis that the availability of infrastructure and the potential of the activity-based cost system in measuring the cost of health services leads to maximizing profitability. The coefficient of correlation (0.314) and the coefficient of determination (0.098) in reducing the cost of health services in a way that maximizes profitability resulting from the change in infrastructure and the potential for the cost-based system of activity. The value of the degree of influence is (1.798). This means that the increase of one value in the availability of the infrastructure and the potential for the activity-based cost system leads to an improvement in the measurement of the cost of health services. Calculated at (6.224), a function at (0.05>a). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. For the reason that the determination of the scope of the health service provided to patients is done by adding a certain margin to the cost of the health service provided, as well as the existence of a specialized department or department to determine the cost of the health service provided to the patients and also possible ways to calculate the cost despite the mechanism of action imposed by the management of hospitals.

**The fourth section**

**Conclusions and Recommendations**

**Conclusions:**

1.The process of reducing expenses and the cost of providing service is one of the factors of increasing profitability and therefore the profitability of any hospital is one of the most important indicators that measure the success of these hospitals from the economic side and this requires the

use of accurate scientific means for the purpose of determining expenses that do not lead to value added to the service provided.

2.The responses of the sample members of the study confirmed that there are obstacles in the hospitals to implement the cost-based accounting system. There is also a lack of conviction by the management of these hospitals of the feasibility of implementing this system.

3.Higher management in private hospitals is not convinced of the feasibility of application of an activity-based cost accounting system because of the high cost of application of it or because they do not want to change.

4.There is agreement with the sample of the study on the extent to which the activity-based cost accounting system contributes to the reduction of the cost of health service and in this way, leads to maximizing profitability in the case of its application.

5.There is a deficiency in the traditional cost system to allotment of the allocation of indirect costs to various activities in private hospitals performance to make incorrect decisions such as health service pricing decisions.

6.Cost systems are fundamental to ensuring stability in the financial system of hospitals by providing management and decision makers with the financial and non-financial information and data they need to evaluate their pre-programmed programs, including planning and control.

7.The existence of an agreement among the sample of the study on the availability of infrastructure and the necessary means to implement the system of costs based on activity.

### **Recommendations:**

1.It was found that the people in charge of management in private hospitals sample study are holders of medical certificate and therefore their interest in providing health care towards patients more than attention to administrative aspects and performance evaluation and decision-making management and planning and control. The people in charge of management in these hospitals must be qualified and trained to be able to understand the financial statements accurately, which helps to make the right decisions.

2.The employees who are fully prepared for the purpose of training and experiencing should be provided through intensive courses on the basic concepts of the application of the cost-based system, as well as the use of experts and specialists in the application of this system.

3.Working under the activity-based costs system in private hospitals will help to obtain more accurate and detailed data on the cost of health

services provided, as well as provide appropriate data for the correct decision-making process.

4.To conduct an analytical study of the problems associated with the application of the activity-based cost system and to work on finding solutions to them, taking into account the many advantages of this system and considering it as an incentive for implementation.

5.It is necessary to establish a department in private hospitals to calculate analyze and classify all the costs incurred by these hospitals in order to eliminate costs that are not valuable to her or unnecessary.

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