

PFABC Role in Controlling Health Services Costs and Increasing Profitability in Private Hospitals

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Abstract

Research aim is to identify role of cost system which based on performance activities to controlling costs of provided services and to increase profitability of the institutions service. Research result appear that, PFABC helps to improve the competitiveness of economic units by adopting a cost system capable for controlling various cost elements, as well as analyzing activities and identifying value-added and non-value-added activities and their disposal. Implemented cost-based system which based on performance activities, helps to introduce a strong management system enables to plan, monitor and measure the performance of majors and subdivisions.

Keywords: PFABC; system, Health; Services; Costs and Increasing Profitability.

Nomenclature & Symbols

PFABC Performance Focused Activity Based Costing

TDABC Time Driven Activity Based Costing

ABC Activity-Based Costing

1. Introduction

Cost information plays a key role in operational and investment decisions. This role made attention to the subject of providing integrated cost systems that meet needs of economic unit. Nowadays, it is very important, especially with increasing competition of, globalization markets, changes in modern production environment, and using advanced technological systems, which led directly or indirectly to lower the proportion of, direct costs, direct materials, and direct wages (and the proportion of indirect costs). These changes, have led to many criticisms for traditional cost systems, which depend directly on allocation of indirect costs and based on specific principles associated with volume of production, or provided service. Which leads to potentially misleading results that lose the ability of cost systems to accurately measure the cost of a product or service and uncontrollability of its components, resulting in inadequate information to make right decisions.

Performance Focused Activity Based costing system (PFABC) expanded applications of ABC and solved the difficulties encountered by TDABC. This system is the latest in the ABC series. It measures cost accurately, evaluates performance and controls, giving management complete flexibility to make sound management decisions. The system is used to assess better performance and energy management.

The research methodology was divided into five parts as following, research methodology, what is the cost system based on the activities based on performance, what is the profitability and services, applied aspect of the research, conclusions and proposals reached by the researchers.

2. Research Methodology

Research problem: Unproviding useful information for agents in order make decisions of providing services cost.

This point affects management decisions which regarding to service delivery and profitability.

The problem of research can be expressed through the following questions:

1. Is it possible to use cost system-based activity to control cost amount for providing services and information to introduce sound decisions?
- 2 - Using of this system will reflect on hospitals profitability?

Importance of research: Importance of this research associated with importance of studying cost system based on performance and activities by distribution costs based on provided services, that leads to reduce costs of these services and increasing hospitals profitability.

Research objectives: Research aim is to identify role of cost system based on performance and activity in controlling costs of provided services and increasing hospitals profitability.

Research hypothesis: According to problem of research, suggested formulate the following hypothesis:

(Using suggested system helps administrations to allocate and distributed indirect costs in proper way and increasing profitability).

- 3-What is cost-based system of activities based on performance

Main idea of PFABC is derived from linking ABC system with ABM system (activity-based management) due to close relationship between these systems, ABC system is two-

dimensional system, first dimension represents description of cost allocation and second dimension describes clarification of treatment in ABC system.

Definition of PFABC system: PFABC is a system identifies and allocate actual costs of each activity in the company with high accuracy. Also, it is considered suitable cost indicator and provide flexibility because some activities its indicators not time. Therefore, it is used as a tool for allocating indirect costs and evaluating performance [1]

It is also known as a system with three dimensions: performance monitoring, and resolution of some indirect cost allocation problems in TDABC. As well as, it facilitates operation of ABC and TDABC [2]

It can be said that, cost-based system of activities based on performance leads to distribution and allocation of indirect costs accurately and properly for all products and providing services as well as customers and monitor performance by measuring deviations that occur in the work.

PFABC application steps: To achieving desired objectives of using and implementing the PFABC system there are steps that must be followed are: - [2] [3]

1. Identifying main activities: It is first step and is important to determine the nature and behavior of costs for each activity.

2. Determining actual resources used for each activity: In this step, the behavior of the actual resources is determined to monitor if first-generation ABC is confused with the second generation TDABC. Economic unit, namely accounting information systems.

3. Determine actual rate of resource for each activity:

In a cost-based activity-based costing system, the actual cost rate is determined for each of the Company's individual activities, through the costs of its actual behavior and behaviors derived essentially from existing information systems.

4. Determining cost of each activity: The cost of each activity is determined and taking into account the behavior of supplier costs. When the supplier is flexible, it is variable and can be extracted by:

Actual cost of activity = Actual resource acquired for activity * Actual price of consumed resource.....(1)

5. Calculating standard rate of activity: This step is essential in implementation of the costing system based on performance-based activities. The standard rate for each activity should be estimated in this step.

It can be accomplished by various means including measurement of labor, market mechanism, internal and external indicators.

6. Calculating deviation of activity price:

According to this method, the managers of cost centers determine the deviation of the activity price by calculating the actual resource of the activity and then multiplying it by the standard price of consumed resource, and subtracting the product from the actual cost of the activity to obtain the price deviation of the elastic resources by comparing the actual costs with the flexible budget and determining the deviation.

7. Calculating costs of applicable activities:

This step takes into account the behavior of resources whether they are consumable or compulsory.

8- Quantity deviation calculation: In this step, the performance of the production manager is measured by comparing the materials actually used in production with the planned standard materials. If the actual material is less than the standard it is a preferred deviation and vice versa if the actual material is more than the standard then the deviation is not preferred or undesirable.

9- Calculate the productivity of each activity: Evaluating management process through the most important information associated with the measurement of activities and represented by:

Productivity = efficiency + effectiveness.....(2)

Efficiency deviation indicates whether specific resources such as time have been used efficiently, or efficiency deviation shows whether the planning manager is successful in achieving the objectives set.

Advantages and Disadvantages of PFABC System:

There are many advantages and disadvantages of the PFABC system, including: [4] [5]: -

1. One of the most important advantages of this system is to neutralize the behavior of actual resources that are acquired for activities through flexible and mandatory resources.

2. The cost of each activity is determined individually and with high accuracy, taking into account the appropriate resources and cost drive.
3. Determine the behavior of resource costs accurately and this is best in determining the costs for each activity and through it because profitability analysis will be accurate and correct.
4. It shows using of capacity and unused energy.

Despite the advantages mentioned, there are shortcomings of this system, including high cost of its application, as well as requires additional effort and time in order to obtain results from that system.

4-Profitability and services

It is also an important tool for measuring management's efficiency in using existing resources.

Profitability is also relationship between profits made by the company and the investments that contributed to these profits. Profitability is a goal of the company and a measure of judging its adequacy.

Profitability is measured either through relationship between profits and sales, or through relationship between profits and investments that JPS accounting forums contributed

To achieving company's profit target required two-steps are:

1. CFO must endeavor to arrange sources of funds in such a way that project owners can obtain required funds at lowest possible costs and risks.
2. CFO tries to invest money which gets from assets in such a way as to enable the whole economic unit and as a unit to achieve a return that is no less than its owners can invest in other projects that are exposed to same degree of risk [7]

From the above, most companies increase profitability growth through the following: [6]

- a. Increase the price of sales, services.
- b. Increase sales and services.
- c. Reducing variable costs.
- d. Reduce fixed costs.

Profitability is a main goal for all institutions, and essential for survival and continuity. It is an end to investors and indicator of interest creditors when dealing with the institution, which is also an important tool to measure the efficiency of management to use resources in

its possession, therefore, a great effort of financial management in the institution directed. To optimize using of available resources in order achieve the best possible return for their owners, whose value is not less than the potential return on alternative investments that are exposed to the same degree of risk.

Institutions are working to achieve their profitability objective through two field, Investment and Financing Decision.

First: Investment decision

An investment decision is the decision on how an enterprise uses the resources available to it to acquire various types of assets.

The impact of the investment decision on profitability is shown by optimizing the allocation of available resources to the various types of assets in a way that balances the appropriate investment in each asset item without increasing any disruption of resources and without a lack of opportunities to enable the organization to achieve the best possible return without sacrificing. With liquidity.

Second: Financing decision

The financing decision is the decision on how to choose the sources from which the institution will be required to finance the investment in its assets. The impact of the financing decision on profitability is reflected in the arrangement of sources of funds (debt and equity of owners) in a way that enables the project owners to obtain the largest return possible, by taking advantage of the advantage of the expansion of fixed-cost borrowing, but without exposure to risks that can result from overstatement to borrow.

5-Production (services)

The issue of production is one of the issues that determine the success or failure of commodity and service production organizations. Therefore, this issue was given the utmost importance by the different organizations that seek profit, maximize material benefits, expand, progress and gain competitive advantages in the markets operating in the same field. Especially in light of the multiplicity and diversity of the objectives of these organizations, which seek to win as many customers as possible, knowing that they can no longer grow, survive and continue without enjoying productive productivity dimensions, and modern technological techniques capable of reducing human efforts, and ensure the ability to achieve best investment. The main elements of production are, human, land,

capital, organization, and time, given the importance of this aspect were chosen to review the most prominent ways to increase production in all forms.

The quality of service is a measure of how the economic unit provides its services, coupled with the expectations of its customers, as the customer's request services in response to their specific needs, and the economic unit must meet those needs with high quality that corresponds to their desires [8]

Methods of increasing commodity and services production [9]

1. The availability of modern equipment, machinery and techniques that facilitate work, and performs many functions that deplete human energies and capabilities, so as to be able to take advantage of human energies in the field of creative thinking and come up with more mental work outputs than muscle.
2. Shorten a lot of time at work, get as many productive goods as possible per hour up to amount that humans can deliver at the same time, and significantly reduce production costs, including operational, lighting, water and electricity costs.
3. A skilled and competent team are able to employ its expertise in the field of increasing production within a record time, and within the required specifications, and according to the quality specified.

Adherence to internal and external labor laws and legislations in order to avoid any legal, trade union, professional and human problems that may hinder productive work and affect quantity and quality.

And relying on the strategy of focus in restricting services, which means that it is an integrated set of measures taken in producing goods or providing services that meet the requirements of a specific competitive segment, and focusing efforts on one or two sectors in providing goods or services [10]

Appliedpart: A brief summary of the research sample:

Service institutions differ from industrial establishments in several areas. The most obvious difference is that service establishments are intangible, and therefore sensitive to the timing and quality of service provided to consumers, as the consumer immediately observes the defects and delays in the delivery of the service provided. It may be severe which causes consumer dissatisfaction to choose an alternative provider after an experience that is not satisfied.

Latin Church of Life Dominican Sisters Hospital of St. Katrina – Baghdad

Geographical location: Al Wahda neighborhood - Baghdad Area: Construction date: 1992

General information about the site: - Thanks to the founding of the hospital to the sovereign Bishop Boulos Dahdah, who supported this institution financially and morally, - This hospital was founded in 1992 and opened its doors on 25 November of the year itself. - In this year, some sections of the hospital were expanded and renovated to provide the best services possible. - A branch was opened for the laboratory and a sonar clinic was opened to provide all necessary medical examinations as well as an outpatient clinic for examination and to give the necessary treatment and first aid to the patients. - The hospital staff consists of the director of the hospital (specialized in gynaecology and obstetrics), the administrative supervisor, the head of the nurses, the resident doctors within the speciality of the hospital, the specialized doctors (gynaecology, anaesthesia and paediatrics), the nurses (university, skilled, skilled midwives and technicians), the workers (cleaning, kitchen, laundry). Maintenance staff (electrician, sanitary installations, cooling and heating) and guards.

Step 1: Identify major activities in the hospital:

In this step, the plant is divided into major activities and auxiliary activities

(Additional Activities) this step is necessary to allocate costs for different activities. It is similar to the steps to implement the costing system based on ABC activities. Through the study of the nature of the work of the Zahra Teaching Hospital the researcher was able to divide it into the main activities and auxiliary activities and the following table shows the division of the hospital on the main activities and auxiliary activities and the nature of the resources required for each and as in Figure (1):

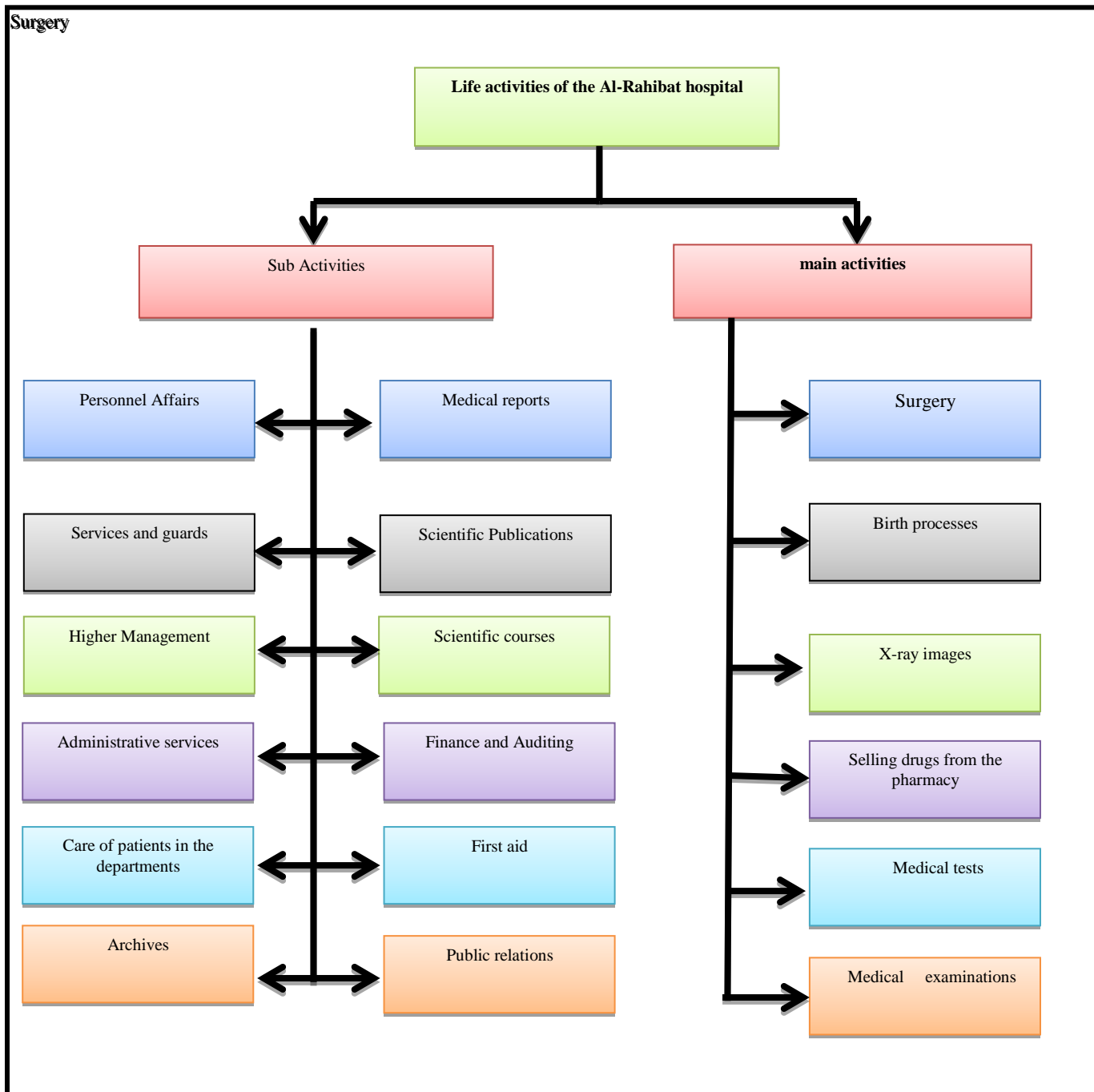


Figure (1): Main and sub-activities

Step 2: Identifying actual resources for each activity: -

In this step, calculating the amounts of actual resources required for each activity which identified in the first step, whether a main or submain activity. Then, distributed for indirect industrial expenses. This step requires identifying and coding the resources according to common accounting system. Indirect industrial expenses of the hospital for 2016 were

calculated based on main audit balance prepared by the hospital's accounting department and according to the standardized accounting system. The following table (1) the distribution of expenses on main and sub-activities:

Table (1) Resources for main activities

Items	Distribution basis	Main Activities					
		Surgery	Birth	X-ray	Sell	Medical	medical
Stationery	Number of	555000	555000	740000	555000	1850000	925000
Hospitality	Number of	139000	—	—	—	—	—
Hormone	Number of	—	—	—	—	1960000	980000
Damaged		—	—	—	8330000	—	—
Water	Number of Employees	381000	169000	212000	127000	212000	424000
Electricity	Number of	4743000	2108000	2635000	1581000	2635000	5271000
Mail and	Times of	847000	376000	470000	282000	471000	941000
Total		6665000	3208000	4057000	10875000	7128000	5841000

Table (2):Resources for main activities (direct and indirect)

Items	Main Activities						Total
	Surgery	Birth	X-ray	Sell	Medical	medical	
Direct	2520000	2520000	2352000	16800000	840000	840000	25872000
Direct	362900000	273900000	63100000	57400000	114300000	109800000	25872000
Indirect	6665000	3208000	4057000	10875000	7128000	5841000	51744000
	372085000	279628000	69509000	85075000	122268000	116481000	103488000

Indirect expenses were allocated to the main and sub-activities based on information obtained from the hospital's accounting departments (financial and cost accounts) in some items and authorization of personal interviews by the researcher with hospital's staff.

Step Three: Determine the actual rate for each activity resource:

In this step, the actual cost of each activity is determined by dividing the actual costs of the activity. The supervisor or assistant makes several cost directives in each activity and for three cost elements. The rates of the main and auxiliary activities were according to Table (3) and (4)

Table (3): Actual rate of main activities

Activities	Cost elements	Engine cost	The equation	the average
Surgeries	Materials	Number of operations	25200000/ 2320	108620
	Direct wages	Number of Employees	362900000/ 100	3629000
	Indirect expenses	Number of operations	66650000/2320	28728
Birth processes	Materials	Number of operations	25200000/2420	104132
	Direct wages	Number of Employees	27390000/100	2739000
	Indirect expenses	Number of operations	32080000/2420	13256
X-ray images	Materials	Number of rays	235200000/39600	5939
	Direct wages	Number of Employees	63100000/50	1262000
	Indirect expenses	Number of rays	40570000/39600	1024
Sell medicines	Materials	Number of patients	168000000/195000	8615
	Direct wages	Number of Employees	57400000/34	1688235
	Indirect expenses	Number of Employees	10875000/34	319852
Analysis	Materials	Number of tests	840000000/103200	8139
	Direct wages	Number of Employees	114300000/85	1344705
	Indirect expenses	Number of tests	71280000/103200	690
Patient tests	Materials	Number of tests	84000000/54000	1150
	Direct wages	Number of Employees	109800000/75	1464000
	Indirect expenses	Number of tests	5841000/54000	108

Table (4): Actual rate of sub-activities

Activities	Cost elements	Engine cost	Equal to	average
medical reports	Direct wages	Number of Employees	19100000/34	56176400
	Indirect expenses	Number of reports	30390000/34000	902
Scientific Publications	Direct wages	Number of Employees	1910000/5	382000
	Indirect expenses	Number of Employees	3459000/250	13836
Knowledgeable	Direct wages	Number of	91000000/50	1820000

courses		Employees		
	Indirect expenses	Number of courses	3427000/20	171350
Finance and Auditing	Direct wages	Number of Employees	72600000/42	1728271
	Indirect expenses	Number of operations	7497000/42	1785000
Personnel Affairs	Direct wages	Number of Employees	27600000/32	862500
	Indirect expenses	Number of Employees	2968000/32	92750
Services and guards	Direct wages	Number of Employees	27600000/90	306666
	Indirect expenses	Number of beds	6821000/450	15157
First aid	Direct wages	Number of Employees	22600000/20	1130000
	Indirect expenses	Number of first aid	3023000/10	302300
Administrative Affairs	Direct wages	Number of Employees	3400000/40	850000
	Indirect expenses	Number of Employees	6961000/1000	6961
Higher Management	Direct wages		52000000/20	2600000
	Indirect expenses	Number of Employees	23428000/20	1171400
Archives	Direct wages	Number of Employees	24200000/40	605000
	Indirect expenses	Number of	1697000/20	84850
Patient Care	Direct wages	Number of	100/40600000	406000
	Indirect expenses	Number of	23745000/400	59362
Public relations	Direct wages	Number of	4850000/5	970000
	Indirect expenses	Number of	9608000/150	64053

It should be noted that in calculating the actual rate of cost elements for each activity, a number of cost drivers have been adopted.

Step 4: Calculating activity standard rate

In this step the standard rate is calculated for each activity, based on information of the planning department in the Hospital according to table(5) and (6).

Table (5): Normative resources required for major activities (direct and indirect)

Items	Main Activities						Total
	Surgery	Birth processes	X-ray images	Sell medicines	Medical tests	medical examinations	
Direct materials	240000000	235000000	2300000000	1500000000	760000000	80000000	5115000000
Direct wages	360000000	260000000	60000000	55300000	112200000	105600000	5115000000
Indirect expenses	70000000	30000000	38000000	9800000	70200000	4842000	1023000000
	670000000	525000000	2398000000	1565100000	942400000	190442000	20460000000

Table (6): Normative resources for sub-activities (direct and indirect)

Activities	Wages	Indirect expenses	Sum
medical reports	180000000	25000000	205000000
Scientific	20000000	30000000	50000000
Knowledgeable	85000000	2500000	87500000
Finance and	7000000	8000000	1500000
Personnel Affairs	26000000	28000000	54000000
Services and	28000000	6000000	34000000
First aid	22000000	2000000	24000000
Administrative	30000000	6000000	3600000
Higher	50000000	23000000	73000000
Archives	24000000	1500000	25500000
Patient Care	40000000	20000000	60000000
Public relations	4000000	9000000	13000000

The normative resources for major activities and assistance have been assessed based on system information. Accounting, experience, engineers and status of Iraqi market and adoption in the factory all these elements are taking into account. Actual energy production for 2016, standard rates for each activity will be calculated as follows:

First: Main Activities: Standard Activity Rate = Standard Activity Costs / Cost (Motor)

Table (7): Standard rate of major activities

Activities	Cost elements	Engine cost	The equation	the average
Surgeries	Materials	Number of operations	240000000/2320	10345
	Direct wages	Number of Employees	360000000/100	3600000

	Indirect expenses	Number of operations	70000000/2320	30172
Birth processes	Materials	Number of operations	235000000/2420	97107
	Direct wages	Number of Employees	260000000/100	2600000
	Indirect expenses	Number of operations	300000000/2420	12397
X-ray images	Materials	Number of rays	230000000/39600	5808
	Direct wages	Number of Employees	60000000/50	1200000
	Indirect expenses	Number of rays	38000000/39600	960
Sell medicines	Materials	Number of patients	1500000000/195000	7692
	Direct wages	Number of Employees	5530000/34	162647
	Indirect expenses	Number of Employees	980000/34	28824
Analysis	Materials	Number of tests	760000000/103200	7364
	Direct wages	Number of Employees	112200000/85	1320000
	Indirect expenses	Number of tests	7020000/103200	68
Patient tests	Materials	Number of tests	80000000/54000	1481
	Direct wages	Number of Employees	105600000/75	1408000
	Indirect expenses	Number of tests	4843000/54000	90

Second: Sub-Activities:

Table (8): Standard rate of sub – activities

Activities	Cost elements	Engine cost	The equation	the average
medical reports	Direct wages	Number of Employees	18000000/34	52941
	Indirect	Number of reports	25000000/34000	735
Scientific Publications	Direct wages	Number of Employees	2000000/5	400000
	Indirect expenses	Number of publications	30000000/250	120000
Knowledgeable courses	Direct wages	Number of Employees	85000000/50	1700000
	Indirect expenses	Number of courses	2500000/20	125000
Finance and Auditing	Direct wages	Number of Employees	7000000/42	170000

	Indirect expenses	Number of operations	8000000/42	190000
Personnel Affairs	Direct wages	Number of Employees	26000000/32	812500
	Indirect expenses	Number of Employees	28000000/32	875000
Services and guards	Direct wages	Number of Employees	2800000/90	300000
	Indirect expenses	Number of beds	6000000/450	133000
First aid	Direct wages	Number of Employees	22000000/20	1100000
	Indirect expenses	Number of first aid	2000000/10	200000
Administrative Affairs	Direct wages	Number of Employees	30000000/40	750000
	Indirect expenses	Number of Employees	6000000/1000	6000
Higher Management	Direct wages	Number of Presidents	50000000/20	2500000
	Indirect expenses	Number of Employees	23000000/20	1150000
Archives	Direct wages	Number of Employees	24000000/40	600000
	Indirect expenses	Number of sections	1500000/20	75000
Patient Care	Direct wages	Number of Employees	40000000/100	400000
	Indirect expenses	Number of patients	20000000/400	50000
Public relations	Direct wages	Number of Employees	4000000/5	800000
	Indirect expenses	Number of interviews	9000000/150	60000

Step 5: Calculating activity price variance: -

In this step, activity price deviation is calculated by multiplying the actual resources earned for the activity by the standard price, and then subtracting the result from the actual cost of that activity. To know whether the deviation is desirable or undesirable. Table (9) shows the price deviation for the main activities:

Table (9): Calculate the price deviation of the main activities

Activities	Cost elements	Price Deviation = (Actual Costs - (Actual Resources * Standard Price)	The amount of deviation	The nature of the deviation
Surgeries	Materials	25200000- 2000)(10345*	4510000	Un-wanted
	Direct wages	362900000- (360000*99)	6500000	Un-wanted
	Indirect expenses	*2200) -66650000 (30172	271600	Un-wanted
Birth processes	Materials	25200000- (97107 *250)	923250	Un-wanted
	Direct wages	27390000- * 9) (2600000	3990000	Un-wanted
	Indirect expenses	32080000 - * 2580) (12397	95740	Un-wanted
X-ray images	Materials	-(5808 * 40400) 235200000	556800	Un-wanted
	Direct wages	63100000- * 50) (1200000	3100000	Un-wanted
	Indirect expenses	40570000- *42000) (960	250000	Un-wanted
Sell medicines	Materials	168000000- * 21800) (7692	314400	Un-wanted
	Direct wages	57400000- * 350) (162647	473550	Un-wanted
	Indirect expenses	10875000- (* 370) 28824	210120	Un-wanted
Analysis	Materials	840000000- * 114000) (7364	504000	Un-wanted
	Direct wages	114300000- * 80) (1320000	8700000	Un-wanted
	Indirect expenses	71280000- * 104000) (680	560000	Un-wanted
Patient tests	Materials	84000000- * 567000) (1481	273000	Un-wanted

	Direct wages	109800000- (* 75) 1408000	4200000	Un-wanted
	Indirect expenses	5841000- (90 * 64000)	81000	Un-wanted

From the table above, we note that most of the cost elements in major activities have undesirable deviations due to the fact that the actual price of these components is high due to inefficient use of available resources. Ancillary activities were price deviations as shown in the Table (10).

Table (10): Calculate price deviation for sub-activities

Activities	Cost elements	Price Deviation = (Actual Cost / Actual Quantity) - (Standard Cost / Standard Quantity)	The amount of deviation	The nature of deviation
medical reports	Direct wages	19100000- * 350)	570650	Un-wanted
	Indirect	30390000- * 41300)	34500	Un-wanted
Scientific Publications	Direct wages	19100000- * 45)	1100000	Un-wanted
	Indirect	3459000- * 25)	459000	Un-wanted
Knowledgeable courses	Direct wages	9100000- * 50)	6000000	Un-wanted
	Indirect	3427000- * 25)	302000	Un-wanted
Finance and Auditing	Direct wages	72600000- * 420)	1200000	Un-wanted
	Indirect	7497000- * 35)	847000	Un-wanted
Personnel Affairs	Direct wages	27600000- * 30)	3225000	Un-wanted
	Indirect	29680000- * 30)	3430000	Un-wanted
Services and guards	Direct wages	27600000- * 85)	2100000	Un-wanted
	Indirect	6821000- * 45)	836000	Un-wanted
First aid	Direct wages	22600000- * 15)	6100000	Un-wanted
	Indirect	3023000- * 12)	623000	Un-wanted
Administrative Affairs	Direct wages	34000000- * 40)	4000000	Un-wanted
	Indirect	6961000- * 1100)	361000	Un-wanted
Higher Management	Direct wages	5200000- * 19)	4500000	Un-wanted
	Indirect	23428000- * 15)	6178000	Un-wanted
Archives	Direct wages	24200000- * 35)	3200000	Un-wanted
	Indirect	1697000-(75000 * 18)	347000	Un-wanted
Patient Care	Direct wages	40600000- * 95)	2600000	Un-wanted
	Indirect	23745000- *450)	1245000	Un-wanted
Public relations	Direct wages	4850000-(800000 * 5)	850000	Un-wanted
	Indirect	9608000- * 140)	1208000	Un-wanted

From table (10), there are undesirable deviations in the auxiliary activities, which requires addressing these deviations. This is one advantages of PFAB system.

Step 7: Calculate the costs of the activities implemented:

In this step, the cost of the activities carried out is calculated by applying the following equation:

Cost of flexible capacity resource applied = $(SP_i * AW)$

Whereas:

SPI: Standard resource price.

AW: Actual port work.

The results of main activities carried out are as follows:

Table (11): Costing of activities carried out for the main activities

Activities	Cost elements	(Spi*AW)	The cost of the activities
Surgeries	Materials	(10345 * 23 20)	24000400
	Direct wages	(360000 * 100)	36000000
	Indirect expenses	(30172 *2320)	69999040
Birth processes	Materials	(97107 * 242 0)	234998940
	Direct wages	(2600000 *100)	260000000
	Indirect expenses	(12397 * 2420)	30000740
X-ray images	Materials	(5808 * 39600)	229996800
	Direct wages	(1200000 * 50)	60000000
	Indirect expenses	(960* 39600)	38016000
Sell medicines	Materials	(7692 * 195000)	1499940000
	Direct wages	(162647 * 34)	5529995
	Indirect expenses	(28824 * 34)	980016
Analysis	Materials	(7364 * 103200)	70176000
	Direct wages	(1320000 * 85)	112200000
	Indirect expenses	(680 * 103200)	70176000
Patient tests	Materials	(1481* 54000)	79974000
	Direct wages	(1408000 * 75)	105600000
	Indirect expenses	(90 *54000)	4860000

Calculate necessary materials for each according to type of service provided to patients, calculate their wages on the number of employees providing those services, and enable the calculation of indirect industrial expenses based on different standard cost engines to find the cost of the activities performed.

Different standard cost engines to find the cost of activities carried out Sub Activities:

Table (12): Calculation costs of activities carried out for sub-activities

Activities	Cost elements	(Spi*AW)	The cost of the activities
medical reports	Direct wages	(52941 *34)	1799994
	Indirect expenses	(735 * 34000)	24990000
Scientific Publications	Direct wages	(400000*5)	2000000
	Indirect expenses	(120000* 250)	30000000
Knowledgeable courses	Direct wages	(1700000 * 50)	85000000
	Indirect expenses	(125000 * 20)	2500000

Finance and Auditing	Direct wages	(170000 * 42)	7140000
	Indirect expenses	(190000 * 42)	7980000
Personnel Affairs	Direct wages	(812500* 32)	26000000
	Indirect expenses	(875000* 32)	28000000
Services and guards	Direct wages	(300000* 90)	27000000
	Indirect expenses	(133000* 450)	59850000
First aid	Direct wages	(1100000 * 20)	22000000
	Indirect expenses	(200000 * 10)	2000000
Administrative Affairs	Direct wages	(750000 * 40)	30000000
	Indirect expenses	(6000 * 1000)	6000000
Higher Management	Direct wages	(2500000 * 20)	50000000
	Indirect expenses	(1150000 * 20)	23000000
Archives	Direct wages	(600000* 40)	24000000
	Indirect expenses	(75000 * 20)	1500000
Patient Care	Direct wages	(400000 * 100)	40000000
	Indirect expenses	(50000 * 400)	20000000
Public relations	Direct wages	(800000 * 5)	4000000
	Indirect expenses	(60000 * 150)	9000000

Step 8: Calculate the Quantity Variance

In this step, measured performance of the productive departments and this step is not found in the first generation and generation. The second is for the ABC system, where the Flexible Budget and resources are considered.

To calculate the deviation of the quantity using the following equation:

$$QV = (AQ * SP) - (SQa - SP)$$

whereas:

QV = Quantity deviation

AQ = Amount of actual resources used

SP = Standard resource price

SQa = Amount of normative resources for actual production

Table (13): Calculate the quantity deviation of the main activities

Activities	Cost elements	The equation	The amount of deviation	The nature of the deviation
Surgeries	Materials	(10345 * 23 20)- (10345 *2000)	3310400	Un-wanted
	Direct wages	* 100) - (360000 * 95) (360000	1800000	Un-wanted
	Indirect expenses) -(30172 * 2200) (30172 *2320	3620640	Un-wanted
Birth	Materials	242 0) (97107 * 2220)	19421400	Un-wanted

processes	Direct wages	$(2600000 * 100) - 85$	39000000	Un-wanted
	Indirect expenses	$(12397 * 2420) -$	1487640	Un-wanted
X-ray images	Materials	$(5808 * 39600) -$	9292800	Un-wanted
	Direct wages	$(1200000 * 50) - 40$	12000000	Un-wanted
	Indirect expenses	$(960 * 39600) - 37500$	2016000	Un-wanted
Sell medicines	Materials	$(7692 * 195000) -$	38460000	Un-wanted
	Direct wages	$(162647 * 34) - * 30$	650588	Un-wanted
	Indirect expenses	$(28824 * 34) - * 30$	115296	Un-wanted
Analysis	Materials	$(7364 * 103200) -$	1472800	Un-wanted
	Direct wages	$(1320000 * 85) - 75$ $(1320000 *$	13200000	Un-wanted
	Indirect expenses	$(680 * 103200) -)$ $(680 * 103000$	136000	Un-wanted
Patient tests	Materials	$(1481 * 54000) -$ $(1481 * 53000)$	1481000	Un-wanted
	Direct wages	$(1408000 * 75) - * 70$ $(1408000$	7040000	Un-wanted
	Indirect expenses	$(90 * 54000) - 53000)$ $(90 *$	90000	Un-wanted

It seems from Table(13), there are undesirable quantitative deviations, ie, the hospital has used more than standard amount of resources in providing actual services, also, there is waste of resources used in the process of providing services.

Sub Activities:

Table (14): Calculate quantity deviation of sub-activities

Activities	Cost elements	The equation	The amount of	The nature of
medical reports	Direct wages	$(52941 * 34) - * 30$	211764	Un-wanted
	Indirect expenses	$(735 * 34000) -)$	735000	Un-wanted
Scientific Publications	Direct wages	$(400000 * 5) - * 4$	400000	Un-wanted
	Indirect expenses	$(120000 * 250) -$	3600000	Un-wanted
Knowledgeable courses	Direct wages	$(1700000 * 50) -)$	8500000	Un-wanted
	Indirect expenses	$(125000 * 20) - * 18$	250000	Un-wanted
Finance and Auditing	Direct wages	$(170000 * 42) - 39)$	510000	Un-wanted
	Indirect expenses	$(190000 * 42) - 39$	570000	Un-wanted
Personnel Affairs	Direct wages	$(812500 * 32) - * 29$	2437500	Un-wanted
	Indirect expenses	$(875000 * 32) - * 29$	2625000	Un-wanted
Services and guards	Direct wages	$(300000 * 90) - * 85$	1500000	Un-wanted
	Indirect expenses	$(133000 * 450) -)$	6650000	Un-wanted
First aid	Direct wages	$(1100000 * 20) - 15$	55000000	Un-wanted

	Indirect expenses	$(200000 * 10) - * 8)$	400000	Un-wanted
Administrative Affairs	Direct wages	$(750000 * 40) - 35)$	3750000	Un-wanted
	Indirect expenses	$(6000 * 1000) - 900)$	600000	Un-wanted
Higher Management	Direct wages	$(2500000 * 20) - 17)$	7500000	Un-wanted
	Indirect expenses	$(1150000 * 20) - 17)$	3450000	Un-wanted
Archives	Direct wages	$(600000 * 40) - * 36)$	2400000	Un-wanted
	Indirect expenses	$(75000 * 20) - * 17)$	225000	Un-wanted
Patient Care	Direct wages	$(400000 * 100) - 95)$	2000000	Un-wanted
	Indirect expenses	$(50000 * 400) - 370)$	1500000	Un-wanted
Public relations	Direct wages	$(800000 * 5) - * 4)$	800000	Un-wanted
	Indirect expenses	$(60000 * 150) - 140)$	600000	Un-wanted

From Table (14), there are undesirable quantitative deviations in most auxiliary activities. These deviations should be addressed and excluded. This positively affects the cost of the services provided in the hospital.

Step 9: Calculate the Productivity of Each Activity)

It is the last step in the PFABC system in which the productivity of each activity is calculated by the sum of the performance deviation and the deviation of effectiveness:

Activity productivity = efficiency deviation (performance +) efficiency deviation

Whereas: -

Performance Deviation = Price Deviation + Quantity Deviation

Following table shows the calculation of this deviation:

Table (15): Calculate the deviation of the effectiveness of the main activities

Activities	Cost elements	The equation	The amount of deviation	The nature of the deviation
Surgeries	Materials	24000400-19875000	4125400	Un-wanted
	Direct wages	36000000-30000000	6000000	Un-wanted
	Indirect expenses	69999040-67653420	2345620	Un-wanted
Birth processes	Materials	- 234998940	21509815	Un-wanted
	Direct wages	260000000-	10000000	Un-wanted
	Indirect expenses	30000740-29981000	19740	Un-wanted
X-ray images	Materials	229996800-	28216800	Un-wanted
	Direct wages	60000000-59000000	1000000	Un-wanted
	Indirect expenses	38016000-30000000	8016000	Un-wanted
Sell medicines	Materials	1499940000-	269940000	Un-wanted
	Direct wages	5529995-4000000	1529995	Un-wanted
	Indirect expenses	980016-890000	90016	Un-wanted
Analysis	Materials	70176000- 69000000	1176000	Un-wanted

	Direct wages	112200000- 110000000	2200000	Un-wanted
	Indirect expenses	70176000-69000000	1176000	Un-wanted
Patient tests	Materials	79974000-70000000	9974000	Un-wanted
	Direct wages	105600000- 99000000	6600000	Un-wanted
	Indirect expenses	4860000-4000000	860000	Un-wanted

Table (16): Effectiveness deviation of sub-activities

Activities	Cost elements	The equation	The amount of	The nature of
medical reports	Direct wages	1799994-1600000	199994	Un-wanted
	Indirect expenses	24990000-	3690000	Un-wanted
Scientific Publications	Direct wages	2000000-1500000	500000	Un-wanted
	Indirect expenses	30000000-2300000	700000	Un-wanted
Knowledgeable courses	Direct wages	85000000-	6000000	Un-wanted
	Indirect expenses	2500000-1800000	700000	Un-wanted
Finance and Auditing	Direct wages	7140000- 6800000	340000	Un-wanted
	Indirect expenses	7980000-6000000	1980000	Un-wanted
Personnel Affairs	Direct wages	26000000-	2000000	Un-wanted
	Indirect expenses	28000000-	3000000	Un-wanted
Services and guards	Direct wages	27000000-	3000000	Un-wanted
	Indirect expenses	59850000-	9850000	Un-wanted
First aid	Direct wages	22000000-2000000	2000000	Un-wanted
	Indirect expenses	2000000-1500000	500000	Un-wanted
Administrative Affairs	Direct wages	300000000-	1500000	Un-wanted
	Indirect expenses	6000000-5400000	600000	Un-wanted
Higher Management	Direct wages	500000000-	5000000	Un-wanted
	Indirect expenses	23000000-	3000000	Un-wanted
Archives	Direct wages	24000000-	1500000	Un-wanted
	Indirect expenses	1500000-1400000	100000	Un-wanted
Patient Care	Direct wages	40000000-	5000000	Un-wanted
	Indirect expenses	20000000-	1000000	Un-wanted
Public relations	Direct wages	4000000-3300000	700000	Un-wanted
	Indirect expenses	9000000-7250000	1750000	Un-wanted

Based on calculated results, it is possible to calculate productivity of each activity,

Table(17) shows productivity calculation: - main activities:

Table (17): Productivity of main activities

Activities	Cost elements	Activity productivity Deviation of efficiency + deviation of effectiveness	amount of deviation	nature of deviation
Surgeries	Materials	4125400 + 7820400	11945800	Un-wanted
	Direct wages	6000000 + 8300000	14300000	Un-wanted
	Indirect expenses	2345620+ 3892240	6237860	Un-wanted
Birth processes	Materials	+20344650	41854465	Un-wanted
	Direct wages	+ 42990000	52990000	Un-wanted
	Indirect expenses	19740 + 1583380	1603120	Un-wanted
X-ray images	Materials	+ 9849600	38066400	Un-wanted
	Direct wages	1000000 + 15100000	16100000	Un-wanted
	Indirect expenses	8016000 + 2266000	10282000	Un-wanted
Sell medicines	Materials	+38774400	308714400	Un-wanted
	Direct wages	1529995 + 1124138	2654133	Un-wanted
	Indirect expenses	90016 + 325416	415432	Un-wanted
Analysis	Materials	1176000 + 1976800	3152800	Un-wanted
	Direct wages	+ 21900000 2200000	24100000	Un-wanted
	Indirect expenses	1176000 + 696000	1872000	Un-wanted
Patient tests	Materials	9974000 + 1754000	11728000	Un-wanted
	Direct wages	+ 11240000 6600000	17840000	Un-wanted
	Indirect expenses	860000 + 171000	1031000	Un-wanted

From the table (18), it is clear that the productivity of all activities and all cost elements is negative. This is an indication of the inefficiency of management and the incorrect use of resources in the delivery of services, which requires addressing these deviations for all activities.

Table (18): Productivity of sub-activities

Activities	Cost elements	Activity productivity Deviation of efficiency +	Amount of deviation	nature of deviation
medical reports	Direct wages	199994 + 782414	982408	Un-wanted
	Indirect expenses	3690000+ 769500	4459500	Un-wanted
Scientific Publications	Direct wages	500000+ 1500000	2000000	Un-wanted
	Indirect expenses	700000+ 4059000	4759000	Un-wanted
Knowledgeable courses	Direct wages	6000000+14500000	20500000	Un-wanted
	Indirect expenses	700000+ 552000	1252000	Un-wanted
Finance and	Direct wages	340000 +1710000	2050000	Un-wanted

Auditing	Indirect expenses	1980000+ 1417000	3397000	Un-wanted
Personnel Affairs	Direct wages	2000000+ 5662500	7662500	Un-wanted
	Indirect expenses	3000000+ 6055000	9055000	Un-wanted
Services and guards	Direct wages	3000000+ 3600000	6600000	Un-wanted
	Indirect expenses	9850000+ 7486000	17336000	Un-wanted
First aid	Direct wages	2000000+ 61100000	63100000	Un-wanted
	Indirect expenses	500000+ 1023000	1523000	Un-wanted
Administrative Affairs	Direct wages	1500000+ 7750000	9250000	Un-wanted
	Indirect expenses	600000+ 961000	1561000	Un-wanted
Higher Management	Direct wages	+ 12000000	17000000	Un-wanted
	Indirect expenses	3000000+ 9628000	12628000	Un-wanted
Archives	Direct wages	1500000+ 5600000	7100000	Un-wanted
	Indirect expenses	100000+ 572000	672000	Un-wanted
Patient Care	Direct wages	5000000+ 4600000	9600000	Un-wanted
	Indirect expenses	1000000+ 2745000	3745000	Un-wanted
Public relations	Direct wages	700000+ 1650000	2350000	Un-wanted
	Indirect expenses	1750000+ 1808000	3558000	Un-wanted

Through the results of application PFABC system in the Al-Rahibat hospital, we can say that this system helps to control and rationalize the costs of providing services by knowing the deviations in each activity separately and the possibility of dealing with these deviations and thus control costs well, as this system is not a cost system It is a good and effective control system on cost elements. It also identifies the resources used and the resources used. The application of PFABC also allocates indirect costs accurately to services through using cost drivers that reflect the cause and effect of cost causes. It helps to allocate the service with its own expenses. Based on these results, the researcher can prove the developed hypothesis of the research. Using performance-based costing system enables management to control production costs by estimating the standard costs of production and then measuring the deviations that occur for each activity separately and possibility of addressing those deviations distractions. Implementation of this system helps to improve profitability by allocating costs, which indirectly helps to reduce cost which in turn significantly improves profitability of the hospital.

3. Conclusions

1-Introduce PFABC system helps to improve competitiveness of economic units by adopting a costing system capable for controlling the various cost elements, as well as

analyzing activities and identifying and eliminating value-added and non-value-added activities.

2-Implementing performance-based cost-based system helps to build a robust management system that enables it to plan, monitor and measure the performance of major and sub-divisions.

3- It was found that most of the activities have price deviation, because of main activities and assistance bear additional costs, whether from raw materials, or direct wages, or indirect expenses due to poor planning.

4-Existence deviations for most of elements cost and almost for most activities. Nature of these deviations are undesirable, as well as undesirable deviation of productivity and this is clear evidence of inefficiency of planning and management.

5-Application of this system will precisely control and calculate the costs of provided services. This will lead to increased efficiency of hospitals performance by increasing and improving profitability.

4. Recommendation

Based on our conclusions, the following proposals may be considered:

1- Support the application of the PFABC system in economic units operating in the Iraqi environment because of its advantages and benefits to that economic unit in terms of finding the deviation of each activity separately and the possibility of addressing these deviations easier.

2- Need to take into account reasons that led to the occurrence of deviations in the costs of the hospital, whether preferred or not, because the existence of deviation is evidence of inefficient performance.

3-Need to apply PFABC system in all sectors because of its great importance in improving and raising the efficiency of performance and thus increase and improve profitability.

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