



Evaluation of outsourcing decision in governmental hospitals in terms of cost and quality

Prof. Shaker Abdul Kareem Hadi

and

Teacher. Hossam Ahmed Mohamed Al Bayati

Abstract

The concept of the outsourcing of activities has appeared and spread in the field of industry and information technology as the process of assigning the management of secondary activities to a (third party) as a specialized external supplier who depends on his work upon technology and advanced and modern techniques in implementing the outsourced activity, and this helps the economic units to focus on their core activities only, which means to provide the product or service to the customer according to the desired requirements. Thus, the concept of the outsourcing has become today as one of the strategic decisions that helps economic unity to avoid the competitive challenges faced, including the reduction of the cost of products and services as well as to improve their quality. The goal of this research is to conduct an evaluation of the net annual cost for the decision of activities' outsourcing and the ratio of improvement in quality, which allows the health unit to proceed with the decision of outsourcing or to maintain the management of the activity inside. The most important conclusions of the study is that application of (supply) outsourcing concept in the health units will reduce costs due to conversion of fixed costs or capital ones to variable costs, which are represented by the paid wage to the contract of the external supplier. The outsourcing also enables the health units to improve their performance through the development of human capabilities and to obtain technology and modern techniques from the external supplier because he has a high level of performance and quality in the area of outsourced activity.

Key words: outsourcing of activities, advantages and risks of outsourcing, strategies of the outsourcing's decision, analytic hierarchy procedure (AHP).

First: Introduction

The concept of the outsourcing is considered as one of the new managerial methods that are working on sharing the management of activities and functions that are internally managed with an external supplier. It is one of the great and strategic decisions that are widely deployed in all fields, where it includes many features but it has also many risks. The decision



requires proper analytic measures for the costs of the decision and ratio of improvement in the quality of service, in order to ensure the proper implementation of the decision. In this research, we will highlight the main benefits of adopting the decision of the outsourcing and what are the risks associated with it, as well as indicating the most important strategies used in the outsourcing and analytical framework of the outsourcing decision in terms of cost and quality.

Second: Research Methodology

1. Study Problem

The problem of high cost of medical services has attracted the interest of many researchers, especially in developed countries. Moreover, the concept of maintaining the quality of service according to customer requirements has become very difficult issue. Therefore, many health units (hospitals) have taken upon themselves the search for modern administrative methods that achieve the required reduction in costs or improve the quality of service provided to the customer. One of these methods is the outsourcing of activities which spreads in many fields, and achieves many results because of the characteristics which this concept has, however, besides these characteristics, there are many risks that may be negatively reflected on the health unit unless there is comprehensive evaluation for the decision according to the studied scientific bases, so the problem of the study can be formulated according to the following question:-

Is the application of the decision of outsourcing activities in governmental hospitals reduced the cost of service and improve its quality?

2. The Objectives of the study

This study aims to achieve the following objectives:-

- A. Showing the knowledgeable bases of the concept of the outsourcing of activities.
- B. Determining the benefits and risks of adopting an outsourcing decision which will be reflected in selecting the appropriate alternative.
- C. Clarifying the mechanism of evaluating the decision of outsourcing activities to governmental hospitals in terms of cost and quality.

3. The Hypothesis of the Search

The application of the decision of outsourcing activities in governmental hospitals properly, it will contribute to improve service quality and reduce costs.

4. The Importance of the Search

The research acquires its significance from the subject importance because the decision of outsourcing is considered one of the significant strategic decisions that may be reflected positively on the health reality provided by the governmental hospitals for its benefits and advantages, including, reducing cost and improving management, gaining high flexibility, accessing experiences and modern techniques from the outsourced sources, in addition to create a healthy environment for joint cooperation between the public health sector (the government) and the private sector through adopting the internal outsourcing option and to



work together in order to achieve the common objectives of providing health, social and cultural services, so as to achieve sustainable development.

5. The Limits of the Research (spatial and temporal)

The research's application was carried out in Ibn al-Nafis Hospital, which is one of the governmental hospitals affiliated to the Iraqi Ministry of Health within the formation of Baghdad / Rusafa Health Department. The research depends on the option of outsourcing the laboratory activity only because it is one of the secondary non-clinical important activities in order to disseminate the results of the decision to the rest of the hospital activities. The research relies on the data of (2018) as the basis for conducting a practical evaluation in terms of cost and quality.

Third: The definition of outsourcing- activities concept

The word "outsourcing" came as a concept from the American economic life; it is the combination of two words, "outside" and "resource", which are used in one artificial word as a kind of abbreviation, means external sources (Gierl et al,2015:1081). The outsourcing activities concept is considered as a tradition that has existed for a long time, by which the economic unity seeks the assistance of other economic units having high potential and capabilities for the activity of outsourcing (Landes,1999:375). According to (Hirschheim,et al,2006:4),the concept of outsourcing activities as an agreement with another economic unit to provide goods or services has existed for centuries. However, (James &Weidenbaum) reported that the outsourcing of activities was not a new concept, but it was already existed in the subcontracts of production operations activities (Gierl et al,2015:1081), It was first used in 1970 through manufacturing departments (administrations) and gradually adopted by other departments (administrations) and functions (Corbett, 2004:257), (Kimmle, 2015) emphasized that the beginning of the use of the concept of outsourcing activities was in the manufacturing companies where many economic units assigned their outsourcing chain activities to external sources, and because of the tremendous communication systems and technology, the concept of outsourcing has expanded to include many complex functions and activities such as human resources as well as financial and accounting information systems (Halmeenmaki,2015:9).As a term, the concept of outsourcing has some ambiguity or confusion within the administrative literature, because of the existence of more than one naming and definition. However, this term is also linked to several other administrative concepts where it is difficult to give it a clear and explicit concept. For example, the Francophone countries are used the term "externalization", while the Anglo-Saxon countries are used the term "outsourcing", whereas in Canada and France, the term "displacement" is used. Therefore, its translation in Arabic has taken a set of terms: (outsourcing of activities, existing of activities, contracting of activities assigning of tasks). (Sumaya, 2012: 7)

As it was mentioned above, it is possible to say that the concept of outsourcing the activities is one of the important decisions that support the strategies of economic unity in terms of cost reduction, quality and performance improvement, besides the achievement of competitive



advantage, which depends on the parties with high potential and specialized in the field of outsourced activity.

Fourth: Benefits and risks of Outsourcing - Activities

(Beasley et al, 2009:81) finds that although there are some expected benefits for the outsourcing of activities such as cost reduction, quality improvements, access of experiences, flexibility and ability to focus on core competencies, the risks resulting from the outsourcing must not be neglected, because they can allow beneficial or opportunistic behavior of service providers, loss of control of activities, increased corporate governance costs, and technological inflexibility in the outsourcing of information systems. The benefits of outsourcing activities are as follows:-

1. Reducing costs

The traditional motivation for the outsourcing is to reduce costs in the short term, where the outsourcing of activities is an effective means of reducing costs in the short term. However, there is nothing wrong with this goal. In fact, a cost strategy may be appropriate for economic units operating in highly competitive markets, and they do not have significant distinctive abilities, but the problem they may encounter, when they are looking for achieving great reductions in costs,(Hietalahti,2009:9).

2. Improving control on costs

When the activities are outsourced from an external supplier, the cost of the service can be determined. Thus, the outsourcing is less dangerous in terms of controlling and supervising costs compared to the internal treatment, and this means that the outsourcing of activities from an external supplier makes costs more obvious. For example, when the internship is free, it will be difficult to determine its costs while the cost of training provided by the supplier is limited, for instance, it will be only for (1000 Euros). Therefore, managers will deal, in this case, strictly with their employees on the need for training, as well as the predictability and measurability will also be realized. In addition, the outsourcing of activities helps to allocate a lot of indirect costs, which leads to avoid many hidden costs, (Belcourt, 2006:261).

3. Converting fixed cost to variable one

It is considered as one of the important reasons of the outsourcing. In fact, the production is made in many economic units by using their own machines. For the maintenance of production continuity throughout the year, the economic unit must maintain its manufacturing capacity. Therefore, the costs are created throughout the year, and also the nature of the manufactured products may be very complex, besides they are difficult to develop, therefore, the option of outsourcing activities is the only solution to this problem, which will reduce the costs of investment in manufacturing, equipment and machines related the outsourced activities. This means that the decision of the outsourcing gleads to disposal of the capital costs related to the outsourced activity. Consequently, the fixed costs will be converted to variable costs, so the conversion of fixed costs to variable has a direct impact on the indicators



of economic units works such as the return on assets indicators (ROA) and improved net profit indicator, (Kumar &Eickhoff,2005:249).

4. Focusing on core resources

During the 1990s, many major economic units abandoned the diversification strategy and adopted a strategy of focusing on their core resources as they are represented the core of business. The background of this thinking is to focus on competitive advantage as it is the most important one in the field of strategic focusing. According to this logic, economic units should focus on what they do better than any other unit and the thinking on outsourcing activities from an external supplier should not include the core activities in order to be the best in their field of work. Thus, this type of strategy enables economic units to increase their focus on core activities in two different ways, (Kremic et al,2006:50):-

*** First method:**

Working on the outsourcing of activities that do not provide a competitive advantage to external parties and thus, it will provide the necessary time to manage the value by focusing on the core activities.

*** Second method:**

The outsourcing from an external supplier helps economic units to concentrate their resources on basic activities because they limit capital investment requirements. Since the economic units have limited capital, it is necessary to use those limited resources only for those activities that contribute to increase the competitive ability.

5. Gaining flexibility

In today's world, economic units need to react more quickly to customers' requirements. Therefore, economical units must be more flexible in meeting these requirements. Consequently, the outsourcing of activities from an external supplier is considered as one of the ways to achieve this goal. By outsourcing activities from an external supplier, economic units can increase flexibility in many different ways that can be expressed in two ways, (Quelin& Duhamel,2003:655):-

* The flexibility refers to the ability of adapting to changes in customer's demands in the short term and when the peak of demands happens, the economic unit can use the potential of external suppliers to meet these demands.

* The flexibility refers to the ability of adapting to a changing business environment in the long term, and this includes, for example, the ability to develop new products.

6. Improving service and quality

Many economic units are engaged in outsourcing activities from an external supplier to increase the level of consistency of their services. For example, when all sub-works (secondary works) are outsourced by an external supplier, this will ensure an appropriate level of service and it can achieve significant improvements in quality, because, in most cases, the economic units choose the supplier whose services are of excellent quality, for most of the external suppliers focus on their own field of work, as well as they have equipment, machines



and specialized personnel. Consequently, this will ensure that the services are delivered at a high quality compared to the other economic units that perform their work on their own. In addition, the suppliers have high flexibility in hiring and rewarding employees, (Jennings, 2002:29).

7. Access to technical talents and new technologies

One of the biggest advantages of outsourcing activities from an external supplier is to invest the specialized professional capacities and abilities of external suppliers in achieving the innovation, by whom the economic unit can benefit from emerging technology that is expensive or impossible to re-manufacture internally.

One of the main motivations of using external supplier is the access to technical talent that is not available within the economic unit because most managers find that it is difficult to find employees with high technical skills. Therefore, the outsourcing of activities is the option through which this kind of technical talent (Kumar and Eickhoff, 2005:251), the other technical motivation for external supplier is the access to new technologies, especially if the work of economic unit requires rapid technological development such as information technology, (Zhu et al, 2001:375).

8. Reducing the spread of risk

The outsourcing of activities from an external supplier can also be considered as a way to reduce the risk to the economic unit through the participation of suppliers. The investment of the economic unit always involves a great deal of risk, because markets, competition, government regulations, financial conditions and technology are all changing rapidly. These changes are particularly risky when they require a large investment but by outsourcing activities from an external supplier, the economic unit can spread the risks of investment through a number of suppliers, (Kremic et al, 2006:51).

The outsourcing risks are classified as follows (The Joint Forum, 2005,11):-

1. *Strategic risks*: include the fear of conflict with the strategic objectives of the economic unit, and the failure to implement appropriate control over the process of outsourcing the service by the external supplier.
2. *General risks*: include the fear of getting bad service that is contrary to what is advertised and contracted.
3. *Compliance risks*: include the failure to comply with privacy and confidentiality laws.
4. *Operational risks*: include the technological failure, fraud and error.
5. *Exit strategy risks*: involve the over-dependence on one supplier, loss of relevant skills in the unit, which is resulting in lack of internal production opportunity.
6. *Implementation risks*: they are like the risk that the external supplier will not be able to carry out the work or to deliver the service in a proper time.

Fifth: (outsourcing) strategies

There are many outsourcing strategies that can be summarized as follows (Quandt, 2012:10-12):-



1.Total or comprehensive outsourcing

This strategy is used when the external supplier handles more than 80% of the assigned activity or service. However, this strategy may be risky because the economic unit does not have control over the activity or service it is supplying. The work also takes a long time to be fully completed, so the field of risk is determined in the inefficiency of the choice of external supplier or else the loss will be very rare in accordance with this strategy.

2. Partial outsourcing

This strategy is the alternative of total and comprehensive outsourcing, where it includes the outsourcing of secondary activities (sub-activities) or spare parts involved in the product or processes that are partially treated, This strategy provides a partial control over the activities of the economic unit, and in the event of failure of the external supplier; it is possible to recover the damaged part of the subsidized activity with minimal damages. Under the partial outsourcing process, the economic unit will have the necessary expertise to implement the whole or comprehensive outsourcing at a later date. This strategy is considered safer than total or comprehensive outsourcing and allows the economic unit to retain the most sensitive parts and more risky in the processes that are assigned to external parties and that will reduce some outsourcing risks.

3.Assigned the outsourcing to one external supplier

This type of strategy is very effective because it does not require a lot of communication when it comes to the outsourcing of activities because it is only from one external supplier, but, on the other hand, it brings some risks because everything is placed in one basket, so if there is a problem in dealing with the supplier, there will be no choice but to deal with him only. Moreover, one of its risks is that if the cooperation continues for a long time, the supplier will know everything about economic unity, and in case of needing to change to alternative supplier, it will not be only costly, but also it is difficult because the difficulty lies in choosing the new supplier who is less expensive and more experienced from the original supplier. Therefore, at the end, the economic unit, in this case, may face the decision to work with an inefficient supplier or to incur a high cost due to staying with the old contractor.

4. Multi-source outsourcing

It is also possible to use multiple suppliers at assigning the selected processes, and this requires the division of labor into parts to remain under control. In this type of strategy, the work will be done well and at a lower cost, because the suppliers will compete with each other to achieve the desired performance at a low price, in order to gain the satisfaction of the economic unit so as not to withdraw the work from them and give it to another supplier. This type of outsourcing depends on a short-term relationship with external suppliers and thus, it will reduce the risks that economic unit may face.

5.External or internal outsourcing

There is another type of strategies for using an external supplier; it means that the outsourcing of activities will be from outside the country or within the country, which depends mainly on



the outsourcing of activities within the structure of the economic unit. In this case, the processing of the activity will be transferred from the economic unit to an external supplier. For example, if the economic unit has a branch outside the country, it is possible to transfer the processing process to this branch, if it can be better in handling this type of operation and has higher capabilities and experience compared to the original unit. This type of strategy is considered a good solution, if there are units that work much better than the economic unit. This type also has another advantage, which is the achievement of structures' integration of the various economic units, whereas, the negotiation and communication, in this type of the outsourcing, may take less time because the communication is internal either by telephone or through the social networks associated with the economic unit, besides, it reduces the problems of accounting, control, violation of rights or patents because everything will remain in economic unity.

Sixth: Analysis of outsourcing decision (cost and quality side)

1. Analyzing the cost of outsourcing Decision

Datamark Company, which is a leading company in the services of outsourcing, has provided a method of conducting the cost of outsourcing consisting of four steps, which are (www.datamark.net):-

First step: The economic unit identifies the activities that it wishes to assign to an external supplier. The adequate understanding of all steps of the operational process will help to conduct an accurate cost analysis and ensure that the services proposed by the service provider are consistent with the results of business expectations. Thus, in this step, it is possible to use a team for analyzing the project of outsourcing to document all steps of the operation as well as to redesign the process to remove extra steps, and this will help to improve efficiency and reduce costs before entering the potential costs and using external supplier.

Second step: The internal costs are determined, which can be avoided by external supplier, after clearly defining the course of the operational process, and then calculation of costs must be determined that the economic unit may avoid are determined, which the economic unit may be avoided, if it uses an external supplier. To begin with this step, it is necessary to classify all costs related to the operational process including direct costs (salaries, equipment, supplies, etc.) and indirect special costs (for general administration and internal services), and it does not involve "fixed costs" because they are submerged costs for the decision alternative, because the decision-maker here focuses on cost analysis on future costs, which can be avoided and which are, in this case, costs that can be eliminated by moving to an external supplier.

Third step: Determining the total costs of the outsourcing decision by an external supplier. After calculating the internal costs, the total cost of the outsourcing decision is determined by an external supplier, whereas the starting point is the bid price for the suppliers of outsourcing the services, in addition to the costs of project's outsourcing management and the costs of



moving to the external supplier, taking into consideration, some opportunities for achieving revenue like the income from selling furniture, non-essential equipment, machines and supplies.

Fourth step: Subtracting the total cost of the outsourcing decision from internal costs to determine the savings

Figure 1 shows the final step of the cost analysis, which is represented in calculating the expected cost savings from the outsourcing. If the figures show that the outsourcing decision has significantly reduced the cost of the outsourced activities, this means that the economic unit will be able to justify proceeding with the next steps of the outsourcing decision from an external supplier, which are represented by signing the contract with the external supplier and participating him in the management of the activity.

Figure (1) Cost analysis method for the decision to outsource cleaning activity in the hospital

Alternative 1: Out Sourcing	Alternative 2: In Sourcing
Direct costs	
Contract Cost	Personnel
• Total contract Cost	• Salaries
	• Benefits
	• Time worked
Supplies	Supplies
• Not Applicable	• Total cost of cleaning supplies
Equipment	Equipment
• Not Applicable	• Maintenance costs
Indirect costs	
Training	Training
Not applicable	• Cost of delivering the training
Hospital Management of Vendor	Hospital Management of cleaning staff
• Salaries	• Salaries
• Benefits	• Benefits
• Time worked	• Time worked
Operations	Operations
• Total cost of utilities (electricity, water, telephones) used by cleaning staff)	• Total cost of utilities (electricity, water, telephones) used by cleaning staff)

Source:(Mujasi & Zerish, 2018:11)

2. Analysis of outsourcing decision and quality of service

Many researchers studied the implications of using an external supplier on quality of service in economic units, both in public and private sectors (Moschuris&Kondylis,2006:4-14), presented a study on outsourcing in public hospitals in Greece, and as part of the study, they asked the participants to assess the impact of the outsourcing decision on some variables such as costs, customers' satisfaction, and improvement of services provided by hospitals. The



results of the evaluation showed that (65%) of the respondents confirmed that the outsourcing decision led to great improvements in hospital services. In an assessment will be conducted for the decision of outsourcing an activity of the laboratory, in this study, in terms of the quality of service which are (reliability, tangibility, Matching, responsiveness, safety, flexibility) from the point of view of hospital administration and laboratory personnel using the method of hierarchical analysis (AHP) as an evaluation tool. This method is based on the order of decision alternatives and then choosing the best ones in the light of a number of specific criteria. , hierarchical analysis procedure (AHP) is considered as the process of assigning numerical points to arrange each alternative through depending on its contribution to achieve the criteria of decision-maker. It is called hierarchical analysis method because it consists of several levels. The mathematical process used in this method is to achieve preference at each level of the pyramid levels by giving points of preference for each site (alternative), and the alternative that gets the largest points will be the best, and this is done by performing a conjugal comparison between two alternatives according to specific criteria that are allocated for them numerical values according to each level based on the preference measure for Thomas Saati^(*) (Winston &Waynel,2004, 788). Table (1) illustrates this, and the steps of applying this method are as follows (Taha,2007:490):-

A. For alternatives matrix

1. Collecting each column of alternatives.
2. Deriving the percentage by dividing the value in each column by the sum of the column.
3. Combining the new columns into a single matrix.
4. Collecting the rows and dividing them by number.

B) For standards matrix

1. Collecting each column in the matrix.
2. Dividing the value in each column by the sum of the column.
3. Collecting the values in each row.
4. Dividing the total by the number of rows.

C. Multiplying extracted percentages in step (4) of (a) with the extracted percentage in step (4) of (b).

D. Multiplying the priorities of the criteria (percentages) in the priorities of the extracted alternatives in (4) of (a).

E. Combining the percentages of the relevant alternative within all criteria for the purpose of extracting the ratios on which the comparison will be made.

(*) He is an Iraqi scientist who was born in Mosul in 1926. He was specialized in mathematics; he served as a professor at the University of Batesburg in the United States.



Table (1) Preference measure of Thomas Saati

Preference Level	Numerical value	Explanation
Equal preference	1	Both activities contribute amount for the goal(the two activities are equal in term of importance for the goal).
Medium or moderate Preference	3	Experience and appreciation prefer an activity over the other with a small degree.
Strong preference	5	Experience and appreciation strongly favor an activity on the other.
Very strong preference	7	an activity is preferred to the other very strongly, and the practice is illustrated its importance.
Absolute preference	9	Evidence of preferring activity on another that represents the highest degree being possible of confirmation.
Medium values between the values above	2,4,6,8	an individual needs, sometimes, to give a numerical median judgment where there are no words that can be described.

Source: (Bahramas, 2012: 6)

Seventh: Practical Side

1. Brief description to the laboratory activity at Ibn al-Nafis Hospital

The laboratory division is considered as one of the most important divisions in Ibn al-Nafis Hospital. It has a distinguish interface for receiving patients and providing medical services through conducting the necessary analyzes. It receives about (2600) patients per month and analyzes are conducted for two groups of patients:-

A. Patients are lying in the hospital's clinical departments; a daily tour is carried out by the employees of the laboratory division in all departments and according to the tables determined by the division for collecting samples that determine the type of analysis required for the patient who is in the hospital, prepared by the working nursing staff in the clinical scientific departments.

B. the consultation clinic is examined the patients and the patient who needs to conduct an analyzes, is sent with a referral card, where the patient himself goes the division of the laboratory to carry out the necessary analyzes.



The laboratory division building consists of a long corridor including the room of the person who is responsible for the laboratory division. The rooms of the laboratory units are divided on the basis of laboratory work. When the patient visits these units for the purpose of conducting analyzes, these units work diligently and continuously to extract the laboratory analysis, in order to submit these analyzes to the patient himself soon they complete them and according to the type of analysis. The following are the names of these units and nature of their work:-

- * The unit of blood diseases and pulling blood out: The function of this unit is to perform laboratory examination (blood films, blood image, and examination of the Spinal cord).
- *Microbiology Unit: it includes the conducting of laboratory analyzes of urine, stool and bacterial transplantation.
- *Histopathology Unit and Histological Cell Examination: it conducts the histological examination, which involves the cutting of surgical samples (prick) and then describes it.
- * Clinical Chemistry and Hormones Unit: it is specialized in conducting the laboratory analyzes and examinations of (sugar rate in blood, liver diseases, kidney disease, and fat rate in the human body).
- *Viruses Unit: it is concerned with detecting the type of viruses in samples, for example in the blood, urine, and cerebrospinal fluid.
- *Laboratory Store: it supplies daily the laboratory units with laboratory materials and supplies.

The laboratory division has about 74 employees and it also contains many devices that have distinctive characteristics because they are of a specialized nature and require precision and speed in the work to ensure quality, moreover, these devices are very expensive. Consequently, the outsourcing is considered as a successful option to ensure the availability of shortage of staff and devices, resulting in saving a lot of costs.

2. Preparation stage of adopting the outsourcing decision

In many studies on the concept of outsourcing, this step is considered as the first stage of the life cycle of implementing the outsourcing decision. At this stage, the general framework of the outsourcing decision, which is based on the analysis tools of the management as well as the reasons or motives for the implementation, is determined. Since the aim of the study is to exam the possibility of improving the quality of the medical service at laboratory of Ibn al-Nafis hospital and to reduce costs by adopting the supply as a strategic option. Therefore, it is important at this stage to form a team, to determine goals, and to choose the right supplier in order to get offers. The following actions are taken at this stage:-

A. Forming the outsourcing project team

A team consisting of several specializations has been formed to study the feasibility of applying the concept of outsourcing activities in the hospital under the Administrative Order No. (1575), and the following is a table that identifies the work place of team members, their competence and number of team members.



Table (2))Team Members of implementing the outsourcing Decision

Seq.	Workplace Team Job	Title or member Specialization	number
1	Technical Assistant	physician Specialization Surgery	1
2	Administrative Assistant	lawful	1
3	Administrative & Financial Division	Account Manager, Audit Manager	2
4	laboratory division	biologist/ responsible for lab chemical/ reservist assistant	2
5	Radiology division	Physician Specialty Radiology / responsible for division	1
6	Pharmaceutical division	Pharmacist Practitioner/ responsible for division	1
7	Statistics division	Chief of Observers / responsible for division	1
8	Hotel Services Division	chief of craftsmen / responsible for division	1
9	Training and Development Unit	Specialist Physician / responsible for unit	1
10	Information Technology Unit	Programmer / responsible for unit	1
11	Maintenance division	mechanical engineer/ responsible for unit	1
12	Patient nutrition and safety unit	Medical Dietary Assistant/ responsible for unit	1

Table: prepared by the researchers

B. The stage of selecting the successful strategy of the outsourcing decision

The selection of the appropriate strategy to ensure the implementation of the decision of outsourcing in Ibn al-Nafis hospital was conducted by the team was based on the types of existed and mentioned strategies in the theoretical aspect as well as the nature of the work of the health unit and the sources of outsourcing, and the following are the actions taken thereon:-

1) Service Level Scope

The discussion and argument are conducted among team members in order to choose the appropriate strategy at providing service by an external supplier and the decision was about the following points:-

- *Outsourcing the entire activity from one external supplier or.
- * Outsourcing the activity partly from one external supplier.



* Outsourcing the entire activity from several suppliers.

* Outsourcing the activity partly from several suppliers.

The unanimous vote was by the team members, but the scope of outsourcing must be partly and from one external supplier, as an initial stage for the following reasons:-

- The full outsourcing of the activity from an external supplier will face several obstacles and legal, administrative or structural problems, for example, the salaries of employees in case of full outsourcing should be paid by the external supplier.

- The outsourcing of the activity from one external supplier is much easier than the outsourcing of activity from several suppliers, which requires the managing of contracts and supervising the work of suppliers.

- The partial outsourcing is an appropriate option as it does not require the enactment of new laws or the authorization of powers that are outside the purview of the supplied health unit.

- Adopting the option of solicitation or direct contracting will be available in case of outsourcing from one external supplier.

2) Location of service receipt

In this regard there are two options for the team, and as follows:-

First: outsourcing from well-known international company (multinational) in the field of outsourcing (outside or insider the borders of the country).

Second: A well-known international in the field of outsourcing (outside or inside the borders of the country).

The task force has adopted the option of outsourcing from an international foreign company operating within the country's borders having a long practical experience in the field of laboratory outsourcing.

3) Resource sharing

The option of outsourcing the activity from an external supplier will establish three options for managing resource sharing (restricted outsourcing, allocated outsourcing, and joint outsourcing). The team selected the option of allocated outsourcing, which means that there is an allocated rate of achieved revenue that exceeds the rate of the income before the operation of outsourcing the activity that must be included in the contract terms.

4) Assets Ownership

In this aspect of the outsourcing strategy, the hospital management is faced with the option of keeping the equipment and materials under its control or assigning them to the external supplier, as well as for the exit policy and the end of the outsourcing period. It is the ownership of the assets, which the supplier brought. The working team has adopted the option of retaining the ownership of the assets and materials of the hospital because the ownership of these assets belongs to the State, and as the same, these assets cannot be legally transferred. As for the ownership of the assets brought by the external supplier, they are considered to be the property of the supplier and are part of the outsourcing contract and they can be



transferred after the end of the contract of outsourcing if the hospital administration sees it if it is in dire need of them.

C. Manner of selecting the supplier and contract type

The working team adopted a method/manner of direct invitation to receive bids and offers, which are included full details of the provided materials, devices or services, in addition to the quantities and delivery dates and the specified quality standards. The team decided to start with companies that have previously dealt with the health unit (hospital). The following table shows names of the companies and the amount of the offer:-

Seq.	provided company name	country	amount
1	Roch Company	Germany	1.503.000\$
2	Urit Company	China	1.488.000\$
3	Fortres Company	France	1.493.000\$
4	Karlkolb Company	Germany	1.485.000\$

The choice between the offers and the selection of the offer was conducted and the team has chosen the German company (Karl Kopp) because its offer had being the most suitable price, in addition, the company has a long history in the field of equipping and managing health and scientific laboratories.

3. Evaluating the decision of outsourcing the laboratory activity

In this step, the decision of outsourcing the laboratory activity will be evaluated from both cost and quality aspects in order to fix the final results.

A. Evaluating the decision of outsourcing laboratory activity(cost side)

In this step, a comparison will be made between the cost of the current activity including the salaries of the employees, the value of the materials and laboratory supplies, the value of the equipment and the salaries of the administration and the supervisors and the operating costs represented by the laboratory share of water and electricity costs, besides the maintenance fees, and others), as well as the cost of outsourcing the activity, which is expressed in the value of the offer or contract, which was equivalent to the value of the Iraqi dinar at the official exchange rate (1182).

Table (3) Evaluation of Outsourcing Decision (Cost Side)

Cost items	in-sourcing/Dinar	outsourcing /Dinar
	2018	2018
Direct cost:		
The amount of the contract or offer		1755270000
Employees	771261865	
Materials and supplies	312710000	
Equipment and devices	836743000	
Indirect cost:		
Training	3650000	



Management/Supervision and follow-up	27230000	27230000
Operation costs	28688965	28688965
Total	1980283830	1811188965
Number of test	31282	31282
Cost of the test	63304	57898

the table: prepared by the researcher based on hospital records and external supplier presentation.

B. Evaluating the decision of outsourcing the laboratory activity (quality side)

In this step, the working team used the tools of the operations research, and one of these tools is the hierarchical analysis procedure (AHP) for evaluating multiple decisions. It is a square matrix which columns and rows of criteria or alternatives and for each intersection point (cell), we answer the following question: how much is more important the criterion or alternative (S) in terms of achieving the objective or criterion for alternatives? If, for example, our answer to the reliability criterion compared to the tangibility is that the reliability is (3) times greater, so we place the number (3) in the cell, on the other side, we put the opposite of the value of preference (1/3), this means that it is for the tangibility criterion, and thus the comparison continues on the rest of the criteria; the following is the steps of applying them:-



1. Binary comparison of standards/ criteria and calculation of priorities

Table (4) Matrix of comparing the best criteria/ criteria preference

Criteria	reliability	tangibility	matching	response	safety	flexibility
reliability	1.00	3.00	3.00	1.00	7.00	5.00
tangibility	1/3	1.00	1/3	5.00	1/3	7.00
matching	1/3	3.00	1.00	3.00	1.00	3.00
response	1.00	1/5	1/3	1.00	3.00	5.00
safety	1/7	3.00	1.00	1/3	1.00	9.00
flexibility	1/5	1/7	1/3	1/5	1/9	1.00
total	3.01	10.34	6.00	10.53	12.44	30.00

Table: prepared by the researchers based on interview with the management and laboratory employees.

The figures obtained are then converted to ratios by dividing the existed number in each column by the sum of that column, and then we derive the weighted average rate and for all rows in the priority column.

Table (5) Calculation of Criteria Priorities

Criteria	reliability	tangibility	matching	response	safety	flexibility	priorities
Reliability	0.33	0.29	0.50	0.09	0.56	0.17	0.32
Tangibility	0.11	0.10	0.06	0.47	0.03	0.23	0.17
Matching	0.11	0.29	0.17	0.28	0.08	0.10	0.18
Response	0.33	0.02	0.06	0.09	0.24	0.17	0.15
Safety	0.05	0.29	0.17	0.03	0.08	0.30	0.15
Flexibility	0.07	0.01	0.06	0.02	0.01	0.03	0.03
							1.00

Table: prepared by the researchers



2. Binary comparison of alternatives and calculation of priorities

In this step, we will compensate symbol (a) for the first alternative, the management of insourcing activity, and the second (b) for the second alternative management of outsourcing from the table for ease and brevity.

Table (6) Comparison matrix of preference of alternatives and calculation of priorities

Reliability	A	B	A%	B%	priorities
A	1.00	1/7	0.13	0.13	0.13
B	7.00	1.00	0.88	0.88	0.88
Total	8.00	1.14			
Tangibility	A	B	A%	B%	
A	1.00	1/5	0.17	0.17	0.17
B	5.00	1.00	0.83	0.83	0.83
Total	6.00	1.20			
Matching	A	B	A%	B%	
A	1	1/3	0.25	0.25	0.25
B	3	1	0.75	0.75	0.75
Total	4	1.33			
Response	A	B	A%	B%	
A	1	1/5	0.17	0.17	0.17
B	5	1	0.83	0.83	0.83
Total	6	1.2			
Safety	A	B	A%	B%	
A	1	3	0.75	0.75	0.75
B	1/3	1	0.25	0.25	0.25
Total	1.33	4			
Flexibility	A	B	A%	B%	
A	1	1/5	0.17	0.17	0.17
B	5	1	0.83	0.83	0.83



Total	6	1.2			
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Table: prepared by the researchers

3. Calculating the total preference points of the alternatives

When the weighted average rate for calculated criteria priorities is multiplied in Table (5) in the weighted average ratio for calculated alternatives priorities in Table (6), we obtain the total preference points which will determine which alternatives are better in terms of improving the quality of service, and the table (7) explains this.

Table (7) Calculating the total preference points of the alternatives

Criteria	Criteria priorities	insourci ng	outsourci ng	first alternatives points	second alternatives points
Reliability	0.32	0.13	0.88	0.04	0.28
Tangibility	0.17	0.17	0.83	0.03	0.14
Matching	0.18	0.25	0.75	0.05	0.14
Response	0.15	0.17	0.83	0.03	0.13
Safety	0.15	0.75	0.25	0.11	0.04
Flexibility	0.03	0.17	0.83	0.01	0.03
Total				0.27	0.76

Table: prepared by the researchers

4. Results

The results of the application showed that the option of outsourcing the laboratory activity is better than the option of maintaining the activity inside from both sides of the cost and quality as it achieves a cost reduction rate of (5406) Dinar for each laboratory analysis as shown in table (3) and the ratio of improvement in quality exceeds the improvement ratio achieved by the first option by (49%) as shown in table (7). Therefore, it is possible to say that the objectives of the study have been achieved, is that the decision of outsourcing reduces the cost and improves the quality of service.



Eighth: Conclusions and recommendations

1. Conclusions

A. Several studies proved that there are many advantages that make the economic units resort to outsource their activities from an external supplier, and the most important of which is reducing costs and improving the quality of the product or service.

B. the application of the concept of outsourcing in the health units will achieve a reduction in costs as a result of conversion of fixed or capital costs to variable costs, which are represented with paid fee/ wages and to the contract of the external supplier.

C. The outsourcing of activities enables the health units to improve their performance through the development of human capabilities and access to technology and modern technologies from the external supplier, as he enjoys a high level of performance and quality in the field of outsourced activity.

D. the rise in quality due to the outsourcing of activity will be reflected on the satisfaction of the customer, which leads to increase competitive ability of the governmental health unit compared with other hospitals in the private sector.

E. The outsourcing helps health units to gain flexibility in implementing customer requirements or avoiding failure and poor work performance through the involvement of an external supplier.

2. Recommendations

A. The health units should adopt the concept of outsourcing activities as one of the options for promoting the state health reality as one of the modern administrative methods that ensures providing the service to the customer (the citizen) with high quality.

B. In order to ensure a successful application of the concept of outsourcing, an external supplier with prior experience should be used as well as training and development of the personnel, which is responsible for applying the project.

C. The appropriate floor should be provided before starting the implementation of the outsourcing decision through the enactment of laws and instructions, which regulate the relationship with the external supplier, thereby reducing conflicts of interest and the occurrence of disputes.

D. Health units should introduce the outsourcing decisions into strategic priorities in order to benefit from the advantages that the concept has, and are represented by cost reduction and quality improvement, and then they will improve their competitive strategy.



E. In the scientific aspect, students of academic studies and professors should be encouraged to strengthen the existing scientific ideas in research through writing researches and holding seminars to promote the culture of outsourcing and its reflection on the economic, social and cultural reality.

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