



## Article

# Evaluating the Performance Efficiency of Ameer Al-Mumineen Specialty Hospital In Al-Najaf Governorate

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**Abstract:** The advancement of the health sector is one of the requirements of the process of economic and social development in any country, as the provision of comprehensive health services guarantees the creation of a healthy society based on individuals capable of advancement, Ameer Al-Mumineen Specialized Hospital in Al-Najaf Governorate is one of the most important. The vital health institutions whose performance study focused on evaluating the efficiency of their performance, which is one of the non-governmental contributions. The study determined the role and type of health and social service provided by Ameer Al-Mumineen Hospital. It relied on the analytical approach in the theoretical aspect and the experimental approach in the applied aspect, using standards and indicators to Evaluate the efficiency of economic and health performance by tabulating the hospital's technical, financial, and administrative data. The results reveal that the hospital provides acceptable health services following international health standards and at subsidized prices that reduce the financial pressure on the patient. The hospital also achieves social and financial profitability in a balanced manner. The study also reached recommendations, including attracting foreign medical personnel to benefit from their expertise and twinning the work of the Ameer Al-Mumineen Hospital with major specialized hospitals outside Iraq to treat complex cases in a way that is commensurate with the patients' financial condition.

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## 1. Introduction

The assessment of the efficiency of current initiatives is crucial since it directly impacts the project's capacity to accomplish its established objectives. This method is essential for finding the most efficient resource use and enhancing economic relationships within the economic entity. It plays a crucial role in detecting flaws and deviations in projects, executing appropriate corrective actions, and improving strengths, contributing to the overall enhancement of the health sector. Ameer Al-Mumineen Specialized Hospital in the Najaf Governorate is

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a prime example of this commitment to continuous improvement, as evidenced by its efforts to recruit international medical teams and collaborate with specialized institutions outside Iraq. This dedication to progress instills confidence in the hospital's future performance and its ability to meet the evolving healthcare needs of the community.

The assessment of performance efficiency in healthcare facilities is an essential procedure significantly impacted by several elements and variables. As an intricate institution, the health sector is especially vulnerable to environmental, political, economic, and social issues. As a result, several nations include it in their development strategies, aiming to improve the effectiveness of their healthcare systems and ensure that health services meet the criteria established by the World Health Organization.

Ameer Al-Mumineen Specialized Hospital is a private-sector hospital in Iraq that substantially contributes to the growth of the health sector by providing high-quality healthcare services.

It is regulated and held to the standards set by the World Health Organization and the Iraqi Ministry of Health.

The research consists of four sections. The first section covers the research methodology. The second section focuses on evaluating performance efficiency and the criteria used for evaluation. The third section examines the current situation of Ameer Al-Mumineen specialized hospital in Al- Najaf. The fourth section represents the practical application of the criteria for evaluating the performance efficiency of Ameer Al-Mumineen, and the research study reached many results

## **2. Materials and Methods**

### **1.1. Importance of research**

The significance of researching to evaluate the performance of Ameer Al-Mumineen Specialized Hospital in Najaf Governorate from 2017 to 2023 arises from the hospital's crucial role in the healthcare sector. The hospital plays a vital role in meeting patients' health requirements by delivering affordable healthcare services that adhere to established health standards, alleviating the financial burden on patients. Additionally, the hospital substantially contributes to addressing the unemployment issue in the governorate by creating job opportunities.

## 1.2. Research problem.

The research problem is the following question: -

(What is the level of achievement of Ameer Al-Mumineen Hospital's planned objectives? What is the role of the health and social services provided by the hospital? What are the dimensions of the process of evaluating the efficiency of the hospital's performance? Can the standards and indicators used determine the imbalances suffered by the hospital?).

## 1.3. Research Objectives

The research aims at several objectives, including: -

- 1- It determines the hospital's ability to achieve the strategy in implementing the planned goals.
- 2- It identifies deviations facing the course of hospital activities and develops treatment solutions to avoid and reduce them.
- 3- It determines the efficiency of the hospital in developing and expanding health activities and services in the future.

## 1.4. Research hypothesis

The study hypothesis may be described as the potential for Ameer Al-Mumineen Specialized Hospital to effectively use the existing resources to address the healthcare requirements of specific medical specialties in Najaf Governorate while operating independently and being financially self-sufficient.

## 1.5. Research limits

- 1- Place limits :- Ameer Al-Mumineen Specialized Hospital in Najaf Governorate.
- 2- Time limits :- Technical and financial data for the research sample from 2017 to 2023.
2. *General framework for evaluating the efficiency of performance of existing projects*

In this section, the concepts of performance efficiency evaluation, the functions and stages of the performance efficiency evaluation process, and the most important standards and indicators for evaluating performance efficiency are identified as a theoretical framework: -

## 2.1. The concept of evaluating the efficiency of performance

The concept of evaluating the efficiency of performance idiomatically consists of three words: the concept of evaluation means an objective assessment of performance, i.e., measuring the degree or determining the level of achievement of goals and comparing them with the planned goals and the concept of efficiency means the optimal use of available resources at the lowest costs to reach the required level, or it is the ability to produce a large number of outputs with the least amount of inputs<sup>(i)</sup>.

As for the concept of performance, it means the measure of the institution's investment of material and human resources in an optimal manner to achieve the results that the institution aspires to achieve<sup>(ii)</sup>, and performance is the goal of the economic unit, which represents the level of its success to achieve the goals set, as good performance is the result of successful and efficient work<sup>(iii)</sup>, It was also defined as a strategic dimension through which the ability of the economic unit to implement its established strategies and confront other units and competing forces<sup>(iv)</sup>.

In material terms, it was defined as measuring the critical expression of the resources used and comparing them with the product or service costs. Performance is effective if the results achieved are higher than expected at the lowest costs. In non-material terms, if the results of public satisfaction and social bodies are positive, this means effective performance, especially for units that aim at social profitability<sup>(v)</sup>.

Performance efficiency evaluation has been defined as a stage of monitoring existing projects to detect deviations in the results achieved from the set objectives and a stage of planning as a means of making planning decisions necessary for the institutional unit's performance<sup>(vi)</sup>.

It was also defined as comparing the achieved and set goals to identify deviations and their causes, develop the necessary solutions to correct errors and deviations, and determine the extent of efficiency and planning in using resources available to the economic unit<sup>(vii)</sup>.

## 2.2. Functions of the process of evaluating the efficiency of performance

The economic unit needs an optimal productive structure to achieve economic development, so the process of evaluating the efficiency of performance has essential functions that increase the efficiency of the economic unit positively, and these functions are as follows <sup>(viii)</sup>:-

- 1- Activating control and follow-up on the efficiency of performance to ensure that the economic unit carries out its work and activities and implements its planned goals efficiently and effectively, and the process of evaluating the efficiency of performance must include the link and integration between the departments and branches of the economic unit, taking into account that the evaluation includes technical and economic efficiency, as well as the optimal use of available resources.
- 2- Evaluate the data resulting from the production processes to identify deviations (quantitative, value) from the planned goals, identify the centers responsible for the deviations, and develop alternative solutions necessary to address them.
- 3- Follow up on the implementation of the objectives set for the project on an ongoing basis and compare them with the actual results to identify the extent to which the project achieves its objectives for a specific period.
- 4- Finding the necessary solutions to reduce bottlenecks and deviations during the project to prevent their recurrence in the future <sup>(ix)</sup>.
- 5- Determine the evaluation body, i.e., the human resources responsible for evaluating the production unit's performance efficiency.
- 6- Compare performance evaluation results with similar units in the same sector and for the same period <sup>(x)</sup>.

## 2.3. Stages of evaluating the efficiency of performance

The process of evaluating the efficiency of project performance is based on three primary stages, which are as follows <sup>(xi)</sup>:-

- 1- Data collection stage: This stage is the main stage in evaluating the efficiency of project performance, as it includes the collection of information, data, and statistics by

the competent team to ensure efficiency. This stage must be accurate and more comprehensive for data, and this is done through access to accounting records, technical and administrative reports, and reviewing final accounts reports.

- 2- Data analysis stage: This stage analyzes data and information from the previous stage to obtain results. The competent team compares the results achieved with the goals set for the economic unit's work plan, using a set of criteria and indicators and identifying deviations, if any.
- 3- Judging the results is the last stage of evaluating performance efficiency: It includes judging the technical and financial results and determining the causes of the deviations achieved, which may be qualitative or quantitative. It also includes identifying the centers responsible for these deviations and finding methods to address them. This stage is one of the most critical stages of evaluating performance efficiency. It represents primary results compared to similar projects or the economic unit itself in advanced stages of time.

#### **2.4. The concept of performance efficiency evaluation criteria**

The selection of criteria for measuring and evaluating performance efficiency is according to the type of project, as the criteria vary according to different projects, and the choice of the standard is commensurate with the planned project objectives. There is no comprehensive standard or indicator to measure the performance efficiency of the project from all economic aspects (financial, productivity, marketing), so evaluating performance efficiency requires using multiple standards and indicators to measure the level of performance as required<sup>xii</sup>

A distinction can be made between the concept of the criterion and the indicator, as the criterion is defined as "what is measured or compared to performance, which is the reference source for obtaining the results that the economic unit seeks to achieve under the conditions of assurance and available possibilities In contrast the indicator is , defined as "a tool to determine the extent of the unit's commitment to

## 2.5. Criteria for evaluating the efficiency of economic performance.

The criteria for evaluating the efficiency of performance are classified according to the role of the standard to measure the level of performance of the project activities as well depending on the target period if it is long-term or short-term, and the most important criteria and indicators for evaluating the efficiency of economic performance are <sup>(xiii)</sup>:-

### 2.5.1 Production capacity criterion: -

The production capacity criterion is one of the most essential and efficient production standards used in the process of evaluating the performance efficiency of existing projects, as it reflects an accurate and comprehensive picture of the project path and identifies deviations quantitatively and qualitatively, and also aims to reduce production costs in terms of optimal utilization of production resources and thus leads to an increase in sales and profits <sup>(xiv)</sup>.

### 2.5.2 Productivity criterion:-

Productivity is based on the laws of microeconomic theory. Productivity means the relationship between inputs, outputs, costs, revenues, production, production elements, and using material and human resources with the highest possible efficiency, the most important indicators of productivity are:-

1. **Total productivity** : - It means the relationship between the elements of production and production requirements used in the production process <sup>(xv)</sup>, according to which the relationship between the inputs and outputs of the production process is measured during a specific period, expressed in a valuable manner due to the difficulty of measuring inputs and outputs quantitatively, and total productivity can be measured by the following formula <sup>(xvi)</sup>:-

**Total productivity = (Outputs / Inputs) or (Output value/ Factor value)**

2. **Partial productivity**: - It means the relationship between the value of the production total production to each element of production used in process and includes several indicators according to the elements of production, including :-

**2.1 Wage productivity** :- It means the relationship between the value of total production and the value of wages, bonuses, and benefits



paid to workers in the production process according to the following formula <sup>(xvii)</sup>:-

**Wage productivity= (Value of total production / Total wages salaries)**

**2.2 Labor productivity:** - It means the relationship between the value of the total production to the units of the labor element and may be the number of employees or the number of working hours, and is expressed in the following form <sup>(xviii)</sup>:-

**Labor productivity = (Total output value/ Work item units )**

**2.3 Productivity of natural resources :-** It means the relationship between the value of total production and the value of natural resources used in the production process and is expressed in the following form <sup>(xix)</sup>:-

**Productivity of natural resource=( Value of total production /Value of natural resources)**

**2.4 Capital productivity:-** It means the relationship between the value of total production to the capital invested in the production process and this indicator is used to measure the efficiency of invested funds and can be expressed in the following form <sup>(xx)</sup>:-

**Capital productivity = ( Value of total production / Invested capital)**

#### **2.5.3 Financial Criteria :-**

These standards aim to measure the percentage of profits achieved and the ability of the project to achieve them, and the most important financial standards used to evaluate the efficiency of performance using profitability are <sup>(xxi)</sup>:-

**1- Financial profit criterion :-** The profits achieved in the production unit are calculated through the difference between total revenues and total costs, and the higher the value of profits, the more it indicates a profit higher than the planned profits, it is calculated according to the following equation <sup>(xxii)</sup>:-

**Financial Profit = Total Revenue – Total Costs**

**2- Criterion of the rate of return criterion of the dinar :-** This criterion shows the percentage of returns of monetary units disbursed to achieve revenues, and whenever the value of this criterion is greater than the correct one, it means that the economic unit is inefficient and that each dinar is recovered with a rate of return on it, and it is calculated according to the following equation <sup>(xxiii)</sup> :-

**Rate of return criterion of the dinar = ( Total revenues / Total costs )**



**3- Criterion of the rate of return on capital:** - It is one of the most important criteria used in the process of evaluating the efficiency of project performance, as it aims to measure the ability of the production unit to achieve profits as well as its ability to convert the money invested in the project into cash liquidity, and it can also be used as a criterion to measure the efficiency of investment performance, as the higher its percentage, the more it indicates the efficiency of project performance, and it can be expressed as follows <sup>(xxiv)</sup> :-

$$\text{Rate of Return on Capital} = \left( \frac{\text{Financial Profit}}{\text{Value of Capital}} \right) * 100\%$$

**4 - Criterion of turnover of invested capital :-** This criterion shows the efficiency of the economic unit in converting capital into cash liquidity and is calculated according to the following equation <sup>(xxv)</sup> :-

$$\text{Criterion of turnover of invested capital} = \left( \frac{\text{Production value}}{\text{Value of capital}} \right)$$

#### **2.5.4 Value added criterion:-**

It is one of the most important criteria for social profitability, as it represents the contribution of the economic unit to increasing the national product and the efficiency of the enterprise in using economic resources rationally <sup>(xxvi)</sup> .

Added value is defined as "the value of the added production generated by the enterprise above the planned production and during a specific period", and it is in several forms, the most important of which are the total added value and the net added value and expressed in the following formulas:-

$$\text{Total Value Added} = \text{Production Value} - \text{Value of Production Inputs}$$

$$\text{Net Value Added} = \text{Total Value Added} - \text{Extinction}$$

Net value added is "the value of total production at the cost of factors of production minus commodity and service requirements and extinction".

The more the project achieves an excellent added value than the values of previous years the more it indicates the improvement and development of the project's efficiency. In contrast, if the project achieves a negative added value, it indicates the project's loss, which means that profits do not cover the costs.

#### **2.6. Criteria and indicators for evaluating the efficiency of health performance**

The process of evaluating the efficiency of health performance in hospitals needs specific standards and indicators to measure the efficiency of medical, technical, and administrative events and

activities. These indicators must be accurate and comprehensive , they would reflect a complete picture of the performance of the various activities and services provided by the hospital<sup>(1)</sup> .

The World Health Organization has made great efforts to develop a system to measure the efficiency of performance in hospitals through specialized organizations and bodies based on standards and indicators to evaluate the efficiency of performance, and these systems vary according to the country in which the health service is available. It is also possible to summarize the criteria and indicators most commonly used in evaluating the efficiency of hospital performance as follows <sup>(xxvii)</sup>:-

### **2.6.1 Criteria for evaluating the performance of staff working in the hospital**

These indicators are concerned with measuring the efficiency of the performance of human resources working in the hospital according to their specialization and include:-

**1- Criteria for evaluating the performance of medical staff in the hospital:** - It includes the performance of doctors working in the hospital and is measured by the following indicators:-

**1.1 Rate of beds per doctor:** - This indicator measures the number of beds allocated to each doctor in the hospital during a specific period , the quality and efficiency of the doctor's performance is measured by the number of beds available to him and according to the recommendations of the World Health Organization as (4-5 )bed <sup>(xxviii)</sup> have been allocated for each doctor, and it is calculated according to the following equation :-

**Rate of beds per doctor = (Number of beds / Number of doctors )**

**1.2 Rate of visitors per doctor:** - This indicator measures the number of patients for each doctor in the hospital as according to international , standard ten have been identified (10) patients <sup>(xxix)</sup> for each doctor (medical consultation), the higher this percentage means the lower the performance of the hospital, and it is calculated according to the following equation :-

**Rate of visitors per doctor = (Number of medical consultation / Number of doctors )**

**1.3 Rate of operations per doctor:** - This indicator measures the number of surgeries each doctor performs in the hospital, there is no global standard to determine the rate of operations per doctor, but it can be compared with the local rates for each country, and it is calculated according to the following equation <sup>(xxx)</sup>:-

**Rate of operations per doctor = (Number of operations / Number of doctors )**

**2- Performance evaluation standards for other staff in the hospital:-** It includes all employees in the various specializations to provide health, administrative, accounting, legal, and service services as follows: -

**2.1 Rate of beds per pharmacist:** - It means the ratio of the number of beds to the number of pharmacists, the World Health Organization has determined the standard rate for this criterion, which is (1:100) bed/pharmacist, and it is calculated according to the following equation <sup>(xxxi)</sup>:-

**Rate of beds per pharmacist = (Number of beds / Number of pharmaceutical staff )**

**2.2 Rate of beds per nurse:-**This criterion measures the performance of the nurse as a percentage of the number of beds in the hospital, and that the decrease in the number of beds means raising the level of health service provided to patients and that the applicable rate is (1:2) bed/nurse, and is calculated according to the following equation <sup>(xxxii)</sup>:-

**Rate of beds nursing staff = (Number of beds / Number of nursing staff)**

**2.3 Rate of beds per Laboratory analyst:** - This criterion measures the performance of the laboratory analysis specialist as a percentage of the number of beds. The applicable rate is (1:100) bed/analyst, and a rise in this indicator means a decrease in the performance of laboratory service in the hospital, it is calculated according to the following equation <sup>(xxxiii)</sup>:-

**Rate of beds per laboratory analyst =(Number of beds /Number of laboratory analysts)**

**2.4 Rate of beds per employee:** - This criterion measures the performance of all employees from the administrative, technical, financial, and service cadres working in the hospital and the

standard rate in force (1:1) bed/employee, and is calculated according to the following equation <sup>(xxxiv)</sup>:-

$$\text{Rate of beds per employee} = (\text{Number of beds} / \text{Number of employee staff})$$

## 2.6.2 Standards for evaluating the performance of operations in the hospital

,One of the tasks of successful management of the hospital is planning organization, control of jobs, policy-making, and optimal utilization of available resources, and the most important indicators for evaluating the operating performance of the hospital are :-

1. **Hospitalization rate:** - This criterion is related to measuring the days of stay of patients for cases that need to be hospitalized. The World Health Organization has determined the standard rate of hospitalization of patients (7) days, it is calculated according to the following equation <sup>(xxxv)</sup>:-

$$\text{Hospitalization rate} = (\text{Number of days hospitalized} / \text{Number of patients hospitalized})$$

2. **Bed occupancy rate:** - The bed is the central part of planning the hospital's capacity, and the high value of this indicator means the efficiency of family exploitation and reducing treatment costs, and that the global standard rate set by the World Health Organization is 80%, and it is calculated according to the following equation <sup>(xxxvi)</sup>:-

$$\text{Bed occupancy rate} = [\text{Number of days of patient stay} / (\text{Number of beds} * 360 \text{ days})] * 100\%$$

## 2.6.3 Criteria for evaluating the performance of health services in the hospital

These standards are concerned with evaluating the efficiency of the performance of health services provided by the hospital, which are under international health standards, and these standards include :-

1. **Anesthesia mortality rate:-** The standard set by the World Health Organization for anesthesia mortality is (1:5000) i.e., one death per 5000 cases of anesthesia, and its decrease means a high efficiency of hospital performance, and it is calculated according to the following equation <sup>(xxxvii)</sup> :-

$$\text{Anesthesia mortality rate} = (\text{Number of anesthesia deaths during the year} / \text{Number of surgeries during the year}) * 100\%$$

2. **Pollution mortality rate:** - Although the hospital is the place of treatment, it may be a source of pollution and infection with other

diseases due to the lack of control of pollution causes and weak preventive measures, the standard rate of pollution mortality (1%) and the decrease in this percentage means high efficiency of the hospital's performance in providing safe health services, and it is calculated according to the following equation<sup>(xxxviii)</sup> :-

$$\text{Pollution mortality rate} = (\text{Number of pollution deaths} / \text{total number of patients}) * 100\%$$

- 3. Percentage of idle devices:** - This criterion measures the ratio of idle devices to the total number of devices, and the lower the percentage of idle devices, the more it indicates the efficiency of the operation of the hospital in the exploitation of material resources, the World Health Organization has not specified a standard for that, it is calculated according to the following equation :

$$\text{Percentage of idle devices} = (\text{Number of idle medical devices} / \text{total number of devices})$$

- 4. Percentage of complaints:** - This criterion measures the ratio of complaints to the number of auditors in the hospital, and these complaints may be due to delays in the appointments of auditors or because of medical errors or otherwise, and the World Health Organization did not specify a standard for that, and the lower the percentage of complaints, the higher the efficiency of the operation of the hospital, and it is calculated according to the following equation<sup>(xxxix)</sup> :-

$$\text{Percentage of complaints} = (\text{Number of complaints in the hospital during a specific period} / \text{Number of visitors during the same period})$$

#### **2.6.4 Criteria for evaluating the performance of health and scientific activities in the hospital**

These standards are concerned with evaluating the performance of health and scientific activities such as seminars, conferences, and other activities, and these standards include :-

- 1. Rate of medical seminars and conferences:** - This criterion measures the rate of seminars, conferences, and other health and scientific activities completed as planned and during a specific period. The World Health Organization has not specified a standard rate for that and it is calculated according to the following equation<sup>(xl)</sup> :-

$$\text{Rate of medical seminars and conferences} = (\text{Number of seminars completed} / \text{number of planned seminars}) * 100\%$$

### 3. *The reality of Ameer Al-Mumineen Specialized Hospital in Najaf*

#### 3.1. Establishment of the hospital:-

Ameer Al-Mumineen Hospital is one of the critical hospitals and the first of its kind in the province of Najaf, the hospital was built according to international health standards and the Iraqi Ministry of Health and Urban Planning and under the supervision and implementation of the most efficient engineers, specialists and consultants, it was opened in 2017 and is located in the health district ,behind the Najaf Court-

The total area of the hospital is (2250) m<sup>2</sup> , and the capacity of the hospital is (200)bed , the hospital ,building consists of six floors and it is one of the specialized hospitals that include individual specialties, specializing in providing high-level health services in eye surgery, heart, cardiac surgery and cancer tumors . Ameer Al-Mumineen Hospital includes a group of highly qualified Iraqi medical cadres, and the hospital is equipped with the latest advanced ,and modern devices, some of which entered Iraq for the first time aiming to provide medical care for patients from the people of Najaf and other provinces, which will alleviate the suffering of travel for many patients Outside Iraq, which costs them large sums of money that burden them.

Diagnostic, health and treatment services are provided at subsidized and reduced prices by order and care of the supreme religious authority (the institution of the hospital) in the current situation to meet excellent health needs and provide an alternative to the travel of patients outside the country for all segments ,of society, especially the poor, the families of martyrs, the wounded and the Popular Mobilization.

Ameer Al-MumineenHospital is one of the non-governmental contributions established to cover the quantitative and qualitative demand for specialized health and treatment services and support the public sector shortage .It competes with the best hospitals and centers of ophthalmology in neighboring countries by facilitating treatment services for patients and alleviating physical difficultiesin bearing travel after treatment , an essential moral aspect in the patient's full recovery.

#### 3.2. Objectives of the hospital

Ameer Al-Mumineen ,Hospital aims to achieve the highest goals including :-

- 1- Stabilization of the medical status in the province of Najaf.
- 2- Providing the most extensive specialized center for ophthalmology and other specialties.
- 3- The possibility of developing and keeping pace with the global renaissance in various medical specialties.
- 4- Training medical and health personnel to increase their expertise and efficiency.
- 5- Serving a large segment of the poor and low-income people.
- 6- Providing medical service at reasonable prices.

### **3.3. Services provided by Ameer Al-Mumineen Hospital**

Ameer Al-Mumineen Specialized Hospital seeks to provide integrated medical and health services, including:-

- 1- Ophthalmic consultation services.
- 2- Corneal transplant services.
- 3- Vision correction technology services.
- 4- Specialized services for retinopathy.
- 5- Consultation services for cancer tumors.
- 6- Specialized services in nuclear medicine.
- 7- Specialized services in partial imaging.
- 8- BitScan diagnostic services.
- 9- Radioisotope testing services with a camera device.
- 10- Thyroid counseling and treatment services.
- 11- Cardiac surgery services.
- 12- Internal Medicine Consulting Services.
- 13- Pain Medicine Clinic Services.
- 14- Sonar and Echo services.
- 15- Advanced laboratory analytical services.
- 16- Providing the necessary medicines in the pharmacy.
- 17- Inpatient services for exceptional cases.
- 18- Development and research services for doctors and specialists.
- 19- Educational and training services.

### **3.4. Types of surgeries in the hospital**

Surgeries are the primary part of the hospital's activities and services, as operations are classified into four types, namely (supermajor, primary, middle, and minor) and include the specialties of eye surgery, heart surgery, and cancer tumors, and



the type of surgery is determined after examining the specialist doctor and conducting the necessary analyzes and tests.

### 3.5. Medical devices in the hospital

Ameer Al-Mumineen Specialized Hospital is equipped with the latest advanced specialized medical devices at the level of the governorate and health systems, and these devices are as in Table (1) as following:-

*Table 1. Medical Equipment in Ameer Al-Mumineen Specialized Hospital*

Devices	Number
Vision correction device	2
Intraocular pressure device	6
Visual Field Inspection Device	1
Eye imaging device (eye sonar)	2
OCT Retinal Examination Machine	3
Corneal examination device	3
Lens Measurement Inspection Device	5
BitReader PET SCAN Scan	1
Cyclotron device	1
Material Inspection Device	1
C.T American type JI Mafras device	1
Sonar device	1
Echo device	1
Osteoporosis Screening Machine	1
Dental chair	2
Integrated dental tools system	2
Munter Patient Monitoring System	20
Anesthesia Carts System	5
Water Treatment System	1
Integrated sterilization unit	1
Integrated laboratory analysis system	1
Spec City device	1
Medical Waste Therm Device	1

*Source: Prepared by the researcher based on technical data in Ameer Al-Mumineen Specialized Hospital*

## 3. Results and Discussion

### 3.1 Production capacity criterion

The evaluation of the production capacity in Ameer Al-Mumineen Hospital will be based on the design production capacity and the actual operating capacity.

Table (2) shows the design, actual production capacity, and implementation rate in the Ameer Al-Mumineen Hospital during the study period (2017-2023). The implementation rate in 2017, which represents the beginning of the establishment of the hospital, is 60% because the technical and material capabilities are not eligible for the entire operation of all hospital services and activities represented in surgeries, consulting services, diagnostic radiology, laboratory services, pharmacy, and other health services, due to the shortage in the number of medical devices and medical and health staff. After that, it is noted that the implementation rate increased until it reached the level of 70% in 2019, then decreased to 50% in 2020, and then took a continuous gradual rise until it reached its highest percentage during

Year	Opertions		Medical consultations		Diagnostic radiology		Laboratory services		Pharmacy		Health services		Implement ation rate
	Design capacity	Actual capacity	Design capacity	Actual capacity	Design capacity	Actual capacity	Design capacity	Actual capacity	Design capacity	Actual capacity	Design capacity	Actual capacity	
2017	10000	6000	15000	9000	1000	600	11500	6900	70000	42000	12480	7488	<b>60%</b>
2018	11000	7150	15300	9945	1050	683	12000	7800	70000	45500	13104	8518	<b>65%</b>
2019	11500	8050	15800	11060	1100	770	12500	8750	70250	49175	14040	9828	<b>70%</b>
2020	11500	5750	16000	8000	1100	550	12500	6250	70500	35250	14040	7020	<b>50%</b>
2021	12000	8400	16500	11550	1200	840	13000	9100	70800	49560	14976	10483	<b>70%</b>
2022	13000	10400	17000	13600	1250	1000	13250	10600	80000	64000	15288	12230	<b>80%</b>
2023	14000	11900	18000	15300	1270	1080	13700	11645	80250	68213	15600	13260	<b>85%</b>

the study period of 85% in 2023, which is close to the entire operation of functional services in the hospital.

*Table 2. Design and actual capacity in Ameer Al-Mumineen Specialized Hospital*

*Source: Prepared by the researcher based on technical data in Ameer Al-Mumineen Specialized Hospital*

### **3.2 Productivity criterion**

Productivity is an essential stage in evaluating the efficiency of economic performance because it reflects the extent to which the unit exploits economic resources by minimizing costs to obtain more returns and higher quality, and that productivity in Ameer Al-Mumineen Hospital from an economic point of view includes: -

**1- Total productivity:** The total productivity in Ameer Al-Mumineen Specialized Hospital can be measured by dividing the value of production (outputs) by the total elements of production (medical materials, wages, capital), which represent the inputs of the production process in the hospital.

Table (3) shows the total productivity in Ameer Al-Mumineen Specialized Hospital during the study period (2017-2023). It is noted that the total productivity fluctuated, as it reached the lowest total productivity value (0.10) in 2020 due to the decrease in the value of production, while it took an increasing rise until it reached the highest value of (0.16) in 2023 due to the high value of production against a relatively more minor increase in the value of the total production elements.

*Table 3. Total Productivity in Ameer Al-Mumineen Specialized Hospital*

Year	Production Value (ID)	Total production items (ID)	Total productivity
2017	1,814,400,000	15,450,320,000	0.11
2018	2,727,603,000	23,670,170,000	0.11
2019	3,035,670,000	23,890,330,000	0.12
2020	2,314,820,000	23,650,428,000	0.10
2021	3,239,116,000	24,910,750,000	0.13
2022	3,818,725,000	25,045,500,600	0.15
2023	4,161,337,000	25,245,063,000	0.16

*Source: Prepared by the researcher based on the financial statements in Ameer Al-Mumineen Specialized Hospital*

**2- Partial productivity:** - It means the productivity of each element of production and includes wage productivity, labor productivity, productivity of raw materials, productivity of capital as follows: -

**2.1 Wage productivity:** - It means the contribution of wages and salaries of workers in the production of planned services, table (4, Column 3), which shows the wage productivity in the Ameer Al-Mumineen Specialized Hospital, noted that the lowest wage productivity value was (1.51) in 2017, which is the year of opening and establishing the hospital, and then the value of wage productivity began to rise until it reached its highest value ( 2.19 ) in 2023, due to the increase in employees, which is attributed to the development of the level of services provided by the hospital.

**2.2 Labor productivity:** It means the contribution of the efficiency of workers in the production of planned services , table (4, column 5) shows the value of labor productivity in Ameer Al-Mumineen Hospital Specialized Hospital. In general, labor productivity during the study period fluctuated, as the lowest value of labor productivity was (19,452,269) dinars in 2020, and its highest value was (29,329,065) dinars in 2018 since increasing the productivity of workers is associated with increasing the value of production in proportion to the number of workers.

**2.3 Productivity of raw materials:** - It means the contribution of the value of the necessary medical materials in the production of the planned services, table (4, column 7) shows the value of the productivity of medical materials in Ameer Al-Mumineen Hospital during the study period, as it is noted that the lowest value of the productivity of medical materials was (7.25) in 2017 and then began to rise until it reached its highest value (12.92) in 2022, where the higher the value of the productivity of medical materials, the more it indicates the efficiency of the hospital in the use of medical materials.

**2.4 Capital productivity:** It means the contribution of one monetary unit of capital (assets) in the production of planned services , table (4, Column 9) shows the capital productivity in Ameer Al-Mumineen Hospital Specialized. It is noted that the lowest value of capital productivity was ( 0.11 ) in 2020, and the highest value was (0.18) in 2023. In general, capital productivity was constantly increasing during the study period due to the increase in production value due to the development of the hospital's activities and services.

*Table 4. Partial Productivity Criterion in Ameer Al-Mumineen Specialized Hospital*

*Source: Prepared by the researcher based on the financial statements in Ameer Al-Mumineen Specialized Hospital\*

Year	Production value I.D 1	Wages I.D 2	Wages productivity 3	No. of employees 4	Labor productivity 5	Medical materials I.D 6	Productivity of materials 7	Value of Capital I.D 8	Capital productivity 9
2017	1,814,400,000	1,200,000,000	1.51	80	22,680,000	250,320,000	7.25	14,000,000,000	0.13
2018	2,727,603,000	1,400,000,000	1.95	93	29,329,065	270,170,000	10.10	22,000,000,000	0.12
2019	3,035,670,000	1,600,000,000	1.90	110	27,597,000	290,330,000	10.46	22,000,000,000	0.14
2020	2,314,820,000	1,450,000,000	1.60	119	19,452,269	200,428,000	11.55	22,000,000,000	0.11
2021	3,239,116,000	1,650,000,000	1.96	127	25,504,850	260,750,000	12.42	23,000,000,000	0.14
2022	3,818,725,000	1,750,000,000	2.18	144	26,518,924	295,500,600	12.92	23,000,000,000	0.17
2023	4,161,337,000	1,900,000,000	2.19	150	27,742,247	345,063,000	12.06	23,000,000,000	0.18

### 3.3 The Financial Criterions

It includes a set of sub-criteria that are concerned with calculating financial profits at Ameer Al-Mumineen Specialized Hospital during the study period (2017-2023) as follows:-

- 1. Financial profit criterion:** - Through it, the profits achieved at Ameer Al-Mumineen Specialized Hospital , table (5, column 3), which shows the value of financial profits in Ameer Al-Mumineen Specialized Hospital during the study period, it is noted that profits fluctuate, as a negative profit value was recorded (-214,648,250) dinars in 2020, and this means that the hospital's revenues did not cover the expenses of the same year, due to the health and economic conditions at the time. Then, it is noted that the value of profits began to increase gradually and continuously until it reached its highest value (1,035,993,750) dinars in 2023. This is due to the increase in revenues versus expenses, which means the efficiency of the hospital's performance in achieving profits under stable conditions.

**2. Criterion of the rate of return criterion of the dinar:** - This criterion shows the percentage of returns of the cash units disbursed to achieve revenues, and whenever the value of this criterion is greater than the correct one, it means that the economic unit is efficient and that each dinar is recovered with a percentage of return on it, from table (5, column 4), which shows the rate of return per dinar in Ameer Al-Mumineen Specialized Hospital during the study period, it is noted that the rate of return of the dinar reached its lowest value (0.92) in 2020 due to the decrease in the value of revenues compared to costs, while its highest value was recorded (1.29) in 2023, due to the increase in revenues in the same year, and in general, the rate of return of the dinar is gradually increasing, and this is due to the increase in total revenues compared to total costs, this indicates the efficiency of the hospital's performance and its economic feasibility in recovering expenses with returns.

**3. Criterion of the rate of return on capital:-** This criterion shows the amount of profitability achieved and its ratio to the invested capital, and is a measure of the efficiency of the performance of the invested capital , from table (5,Column 6), which shows the rate of return on the capital of Ameer Al-Mumineen Specialist Hospital during the study period, it is noted that the rate of return on capital has recorded a negative value of (-0.98) in 2020 and then began to rise until it reached its highest value (4.50) in 2023, due to the increase in the value of profits with the stability of capital in the last years of the study period, and this indicates the efficiency of the hospital's performance in achieving profitability.

**4. Criterion of turnover of invested capital:-** This criterion shows the efficiency of the economic unit in converting capital into cash, table (5,Column 8) shows the capital turnover rate of Ameer Al-Mumineen Specialized Hospital during the study period. The value of the capital

turnover rate fluctuates, reaching its highest value (0.18) in 2023 and its lowest value (0.11) in 2020.

The high turnover rate of capital means the hospital's efficiency in investing money due to the high value of production and, thus, the possibility of converting assets into cash to meet the circumstances.

Year	Total Revenues LD 1	Total Costs LD 2	Financial Profit LD 3	Rate of return criterion of the dinar 4	Value of Capital LD 5	Rate of Return on Capital 6	Production value LD 7	Criterion of turnover of invested capital 8
2017	2,533,820,000	2,253,341,750	280,478,250	1.12	14,000,000,000	2.00	1,814,400,000	0.13
2018	2,924,279,000	2,536,165,250	388,113,750.00	1.15	22,000,000,000	1.76	2,727,603,000	0.12
2019	3,248,290,000	3,072,095,150	176,194,850.00	1.06	22,000,000,000	0.80	3,035,670,000	0.14
2020	2,462,550,000	2,677,198,250	-214,648,250.00	0.92	22,000,000,000	0.98-	2,314,820,000	0.11
2021	3,361,848,000	3,093,406,850	268,441,150.00	1.09	23,000,000,000	1.17	3,239,116,000	0.14
2022	4,039,656,000	3,280,500,850	759,155,150.00	1.23	23,000,000,000	3.30	3,818,725,000	0.17
2023	4,559,050,000	3,523,056,250	1,035,993,750.00	1.29	23,000,000,000	4.50	4,161,337,000	0.18



Table 5. Financial Criteria in Ameer Al-Mumineen Specialized Hospital

Year	Production value I.D 1	Value of Production Inputs I.D 2	Total Value Added I.D 3	Extinction I.D 4	Net Value Added I.D 5
2017	1,814,400,000	692,285,500	1,122,114,500	315,806,250	806,308,250
2018	2,727,603,000	766,469,000	1,961,134,000	315,806,250	1,645,327,750
2019	3,035,670,000	796,148,900	2,239,521,100	617,406,250	1,622,114,850
2020	2,314,820,000	589,103,000	1,725,717,000	617,406,250	1,108,310,750
2021	3,239,116,000	745,392,600	2,493,723,400	655,954,250	1,837,769,150
2022	3,818,725,000	830,191,600	2,988,533,400	655,954,250	2,332,579,150
2023	4,161,337,000	917,689,000	3,243,648,000	655,954,250	2,587,693,750

Source: Prepared by the researcher based on the financial statements in Ameer Al-Mumineen Specialized Hospital

### 3.4 The Value-Added Criterion

- 1. Total added value:-** This criterion shows the added value resulting from the production process .
- 2. Net Added Value:-** This criterion shows the net added value achieved from the exclusion of the value of extinctions .

Table (6) notes that the gradual increase in total and net added value is due to the increase in production value compared to the value of production inputs. This is an indicator of the efficiency of the hospital's performance, and it means that Ameer Al-Mumineen Hospital creates value in the national income.

Table 6. Value Added Criterion in Ameer Al-Mumineen Specialized Hospital

Year	Number of doctors 1	Number of beds 2	Rate of number beds per doctor 3	Number of medical consultations 4	Rate of visitors per doctor 5	Number of operations 6	Rate of operations per doctor 7
2017	12	200	17	9000	750	6000	500
2018	14	200	14	9945	710	7150	511
2019	15	200	13	11060	737	8050	537
2020	16	200	13	8000	500	5750	359
2021	18	200	11	11550	642	8400	467
2022	19	200	11	13600	716	10400	547
2023	20	200	10	15300	765	11900	595

Source: Prepared by the researcher based on the financial statements in Ameer Al-Mumineen Specialized Hospital

### 3.5 Criteria for evaluating the efficiency of health performance in the hospital

#### 1 - Criteria for evaluating the performance of medical staff in the hospital

**1.1 Rate of number beds per doctor:** - Table (7, column 3) shows that the rate is gradually declining until it reached the lowest value of (10) bed/doctor in the year 2023 due to the increase in the number of doctors to meet the needs of the hospital, but compared to the standard of the World Health Organization, which determines (4-5) bed/doctor, it is clear that Ameer Al-Mumineen Hospital is within the non-standard limits despite the decrease in the value of the indicator in 2023, and this does not mean a decrease in the efficiency of service performance Medical in the hospital but reflects the role of medical staff and their bearing of the increased burden of medical services.

**1.2 Rate of visitors per doctor:** - Table (7, column 5) shows that the highest value of the average number of auditors (consultative) is (765) references/doctor in 2023, which is approximately 64 visitors/doctor per month, and an average of (6-8) visits per day (considering that the average doctor's shift is 2-3 days in the week). Still, it is considered a good indicator compared to the local rates of annual visitors to doctors in other hospitals.

**1.3 Rate of operations per doctor:** - Table (7, column 7) shows that the highest value of the rate of operations/doctor (595) operations/doctors in 2023, i.e., an average of 50 operations/doctor per month, and an average of 4 operations per day (considering that the average doctor's time is three days per week), and this is a good indicator of the

efficiency of performing surgeries per doctor per day in Ameer Al-Mumineen Hospital compared to the local rates of doctors' operations, especially that the World Health Organization did not specify a standard for the rate of operations per doctor.

*Table 7. Criteria for evaluating the performance of medical staff in Ameer Al-Mumineen Specialized Hospital*

*Source: Prepared by the researcher based on technical data in Ameer Al-Mumineen Specialized Hospital*

## **2 - Criteria for evaluating the performance of other staff in the hospital**

**2.1 Rate of beds per pharmacist:** - This criterion shows the extent of the burden borne by the pharmacist in providing treatment service to patients hospitalized, and from table (8, column 3), it is noted that the rate is gradually declining until it reached its lowest value (67) bed/pharmacist during recent years during the study period, which is less than the standard according to the World Health Organization, which determines (100) bed per pharmacist, and from the above, the hospital is insufficiency. On the one hand, The availability of the pharmaceutical staff is a good indicator of the availability of treatment services for patients in a way that meets their needs and numbers.

**2.2 Rate of beds per nurse:** - This criterion shows the efficiency of the performance of nurses in providing health service to inpatient patients, and from table (8, column 5), it is noted that the lowest value during the study period (12) during the years 2022 and 2023, and compared to the World Health Organization standard that determines (2) bed/patient, the hospital needs to increase the number of nurses to meet the needs of the patients from health care in line with the standard.

**2.3 Rate of beds per analyst:** - This criterion shows the efficiency of the performance of analysts in providing health service and laboratory analyses to inpatient patients, and from table (8, column 7), it is noted that the lowest value during the study period (20) during the years

2022 and 2023, compared to the World Health Organization standard that determines (100) bed/analyst, the hospital suffers from inflation in the number of analysts compared to the number of inpatient patients.

**2.4 Rate of beds per employee:** - This criterion includes both service, financial and administrative cadres to walk the activities and services of the hospital, and from table (8, column 9) it is noted that the rate of bed/employee reached the lowest value during the study period (2) during the years 2022 and 2023, and this value is almost standard according to the global standard of the World Health Organization, which specified (1) bed per employee, which means the efficiency of the performance of cadres working in the conduct of hospital work.

*Table 8. Criteria for evaluating the performance of other staff in Ameer Al-Mumineen Specialized Hospital*

*Prepared by the researcher based on technical data in Ameer Al- Mumineen Specialized Hospital*

### **3- Criteria for evaluating the performance of operations in the hospital**

**3.1 Hospitalization rate:** The rate of hospitalization in Ameer Al-Mumineen Hospital ranges from hours to one day, as in table (9,column 3) which shows the rate of hospitalization (1) days, which is less than the standard set by the World Health Organization for patients to stay in the hospital (7) days, and the reason for the low rate of hospitalization is attributed to the nature of hospital operations that may need hours of recovery.

Year	Number of beds 1	Number of pharmaceutical 2	Rate bed per pharmacist 3	Number of nurses 4	Rate bed per nurse 5	number of laboratory 6	Rate bed per analyst 7	Number of employees 8	Rate bed per employee 9
2017	200	1	200	10	20	5	40	50	4
2018	200	2	100	12	17	5	40	58	3
2019	200	2	100	15	13	7	29	69	3
2020	200	2	100	16	13	8	25	75	3
2021	200	3	67	16	13	8	25	80	3
2022	200	3	67	17	12	10	20	93	2
2023	200	3	67	17	12	10	20	98	2

**3.2 Bed occupancy rate:** The family occupancy rate, according to the results of table (9,column 4), is lower compared to the standard set by the World Health Organization (80%) annually.

Table 9. *Criteria for evaluating the performance of operations in Ameer Al-Mumineen Hospital*

Year	Inpatient patients 1	Days of sleep 2	Hospitalization rate 3	Bed occupancy rate 4
2017	1900	2150	1	2.95
2018	2100	2250	1	3.08
2019	2250	2300	1	3.15
2020	610	680	1	0.93
2021	1700	1870	1	2.56
2022	1932	2300	1	3.15
2023	2160	2530	1	3.47

*Source: Prepared by the researcher based on technical data in Ameer Al-Mumineen Hospital*

#### 4 - Criteria for evaluating the performance of health services in the hospital

**4.1 Anesthesia mortality rate:** The standard set by the World Health Organization for anesthesia mortality is (1:5000), i.e., one death per 5000 cases of anesthesia, the percentage of anesthesia deaths in the hospital during the study period is zero, and this indicates the efficiency of the hospital's performance in providing standard health services.

**4.2 Pollution mortality rate:** The standard set by the World Health Organization for the percentage of pollution deaths is (1%), and the percentage of pollution deaths in the hospital is zero, which indicates the efficiency of the hospital's performance and its keenness to provide health services at a high rate.

**4.3 Percentage of idle medical devices:-** The World Health Organization has not specified a standard, the hospital is in continuous maintenance and maintenance , and there are no disabled devices.

**4.4 Percentage of complaints:** According to hospital data, the number of complaints ranges between 1- 2 per month, a small percentage compared to the number of patient consultations and surgeries. This may be due to the large number that the hospital receives compared to

its operational capacity, while the World Health Organization did not specify any percentage for that.

#### 5- Criteria for evaluating the performance of health and scientific activities in the hospital

**The rate of medical seminars and conferences:-** According to the results of table (10), it is noted that the rate of seminars and conferences is gradually increasing, and this is a good indicator of the efficiency of the hospital's performance in research and development services, while the World Health Organization did not specify a standard for the rate of completion of health seminars.

*Table 10. Rate of Medical Seminars and Conferences in Ameer Al-Mumineen Specialist Hospital*

Year	Activities Performed 1	Planned Activities 2	Rate of seminars and conferences % 3
2017	5	8	63
2018	7	12	58
2019	7	13	54
2020	3	8	38
2021	6	10	60
2022	8	15	53
2023	10	15	67

*Source: Prepared by the researcher based on technical data in Ameer Al-Mumineen Hospital*

#### 4. Conclusion

- a. Ameer Al-Mumineen Specialist Hospital provides modern medical devices such as the PET SCAN device, which is the first device in nuclear medicine and positron imaging, and the fees for its examinations are appropriate and do not burden the patient.
- b. Through the analysis of the production capacity standards of the hospital during the period (2017-2023), it was found that the hospital has worked since its opening with an actual operational capacity of 60% in 2017 and then began to increase in the implementation rate until it reached 85% of the design capacity in 2023, and this indicates the efficiency of the hospital's performance in implementing the set goals and increasing the health activities and services it provides to reach total design capacity.
- c. As for the productivity standards (labor productivity, wage productivity, productivity of medical materials, capital productivity), it is noted that they achieved increasing percentages during the study period (2017-2023), and this indicates the efficiency of the hospital's performance and the balance between the value of production and the value of production requirements.
- d. With regard to financial standards, the results of the financial profit criterion note that the hospital achieved varying profits during the study period and then began to achieve positive profits, but these are relatively few compared to the profits of other hospitals. This indicates the efficiency of the hospital's performance in achieving self-profits and independence commensurate with the hospital's social goals.
- e. As for the results of other financial standards (dinar rate of return, rate of return on capital, capital turnover rate), it is noted that they have achieved acceptable and good ratios.



- f. Regarding the standards of health performance efficiency, it is noted that the hospital witnessed a significant increase in the number of doctors during the study period to meet its needs and medical services, but the number of medical staff is still within non-standard limits compared to the standards of the World Health Organization.
- g. The hospital is insufficiency as far as the pharmacist cadres are concerned, which means the hospital's efficiency in providing treatment services to patients by competent staff.
- h. While the hospital needs more nursing staff in line with the standards of the World Health Organization, at the same time, the hospital suffers from an inflation in the number of analysts compared to the number of patients.
- i. Also, the hospital is efficient in terms of administrative and technical cadres to conduct the hospital's business.
- j. As for the standards of operating performance, service performance, and scientific and medical activity performance, the hospital has achieved standard and acceptable ratios according to the World Health Organization standards.
- k. The mortality rate criterion has been remarkably positive, and this is due to the efficiency, follow-up, and keenness of the hospital's management to apply health and safety standards in all services and activities.
- l. The field visit to the hospital noted that the hospital administration is interested in studying and estimating patients' needs for its services. This means there is an equal relationship between supply and demand.
- m. The hospital's strategy of providing efficient and high-quality medical services at subsidized prices has maintained the

competitive advantage of Ameer Al-Mumineen Hospital in the market compared to other hospitals.

- n. The researcher concluded that successful health management is the cornerstone of the success of health institutions such as Ameer Al-Mumineen Hospital and that achieving social goals is part of the humanity represented by the health profession in general, as well as that achieving social profitability does not mean not achieving financial profitability.

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