

**The investment Decision Making According to the Preliminary Feasibility Study for the 100-Bed Teaching Hospital - Service Sector in Diwaniya Governorate (Case Study)**

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**Abstract:**

The research aims to prepare a preliminary feasibility study that shows the importance of preliminary feasibility study in investment decision making, carrying out of the local demand of service provided in accordance with international standards and statement of investment opportunities available to the private sector in several investment methods. In order to reach the objectives of the study was adopted as a method of partial analysis at the level of economic unity through the study demand, supply, costs, economic and social profitability.

The health sector in Iraq is one of the service sectors facing today a continuous deficiency due to the increase in population growth, diseases and injuries resulting from wars and conflicts, On the other hand, there is a deficit in government funding to complete health service projects, including the Diwaniya hospital with a capacity of 400 beds, Which completed part of its civil works by 19%.

Accordingly, a preliminary feasibility study was prepared to ensure that there are no fundamental problems that hinder completion the project by investment of the private sector (national or foreign) based on the legislation in force and the market study, which showed the need to invest a 100 bed hospital distributed among 80 beds for care and 20 emergency beds, as well as Specialized clinics and advanced medical centers for all specialties with a medical university to treat lack of medical and nursing staff depend on approved standards, With providing excellent services and competitive prices leading to the development of the health sector in the Diwaniya province and neighboring provinces.

**keywords:** preliminary feasibility study, Economic study, Diwaniya Hospital.  
Duration of data approved in the study: 2006 and 2014-2017.





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### **Introduction:**

1. From the 1980s to the present day, Iraq was in constant conflict, characterized by wars, economic siege and sectarian strife, which resulted to a deterioration in the health system as a result of the damage in existing hospitals, where 7% were damaged and 12% were looted. This required attention to this sector. (United Nations Development Program, 2016: 113).

Therefore, to develop the health sector the government has been implementing a number of hospitals, Among these hospitals was Diwaniya Hospital with a capacity of 400 beds. But due to the financial crisis of low oil prices and War with Terrorist Organization, work on the project has stopped, to Solve the problem in this project and not falling into similar problems for future projects, The importance of the preliminary feasibility study comes through the investment decision to complete or abandon the project, according to several indicators including the size of the demand for the service provided, type and characteristics of the proceeds of the financial transition to detailed feasibility study.

However, this sector faced the problem of the inability of investment spending to complete its facilities, which are under construction, as a result of the deficit

of the government budget, starting in 2014, due to the war on what is known asit was suggested to complete these facilities by the private sector (national or foreign), whether through public-private partnership or through investment in accordance with the investment law No. 13 of 2006, based on the preliminary feasibility study to ensure that there are no fundamental problems hinder the possibility to complete the project, which has a completion rate of 19%, which means that about 81% of the project must be accomplish, the fact that the preliminary study is an exploratory study of the conditions and circumstances that show the possibility of proceeding with the detailed study or not because of the high cost.

**Research Question:** What are the advantages of giving importance to the preliminary feasibility study in the statement of the need to establish the investment project represented by the establishment of a hospital capacity (400 beds) in the province of Diwaniya.

**Research Hypothesis:** The study assumes that accepting the initial idea of making investment decision of a project requires preparation of a preliminary feasibility study based on the available statistical and economic data obtainable by the official authorities to purpose of determining the demand for the service provid and the competitiveness of the project.

**Research Objectives:** The method and components to preparing a preliminary feasibility study for a health service project according to the official statistics available for the purpose of making the investment decision to establish the project or not.



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### 1.Theoretical Framework for the Preliminary Feasibility Study (Concept, Justifications, and Requirements):

First: Concept of the feasibility study.

The economic feasibility study of the project is defined as the specific scientific methods used in the process of collecting the data required for the project and analyzing it for the purpose of verifying the feasibility of the investment decision to establish the project or not.(Shaker, no date: 23)

Second: justification for the feasibility study.

The importance of the preparation of the feasibility study due to the existence of a time lag between the date of an investment decision or investment spending and the date of obtaining the return the investment decision. Therefore, we find the importance of preparing the preliminary feasibility study for the idea of an investment project for the purpose of making the decision to abandon the idea or to continue the detailed feasibility study. The initial study aims to provide indicators that include briefness and focus on the following aspects: (Lotfi,2006: 2 , 10 respectively)

1- Determine the dimensions of the investment idea for the project: by indicating the existence of a basic need for the ( products or services) of the project or not and the extent the flow of investments to the project area.

2- Conformity to government policies: by matching the proposed project to the planned development goals of the government and the circumstances of the activity, the existence of legal impediments to the implementation of the project from non-implementation.

3- Project environment: Describe the environment in which the project is located.

The objective of the feasibility studies is to ensure access to rational investment decisions by allocating efficient resources and seeking maximum profit for the private sector or national profitability by achieving the objectives of the plan. (Attia, 2008: 11)

Third: Requirements for the preliminary feasibility study.

The preliminary feasibility study of the investment project includes a group of requirements represented by: (ibid:13-14)

1.Adapt to government policies.

2.Availability of capital required for the project.

3.Statement of market needs for the project.

4.The volume of the project competition.

5.The relationship between project financial potential and future planning.

6.Determinants of the investment climate and economic environment of the project.

7.Fit rates of return for investment.

8.The appropriateness the laws of the project in terms of the absence of any impediment to the law of its executing, provided by the laws of incentives and guarantees.



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9. Fit the project location (economically, commercially) in terms of inputs and infrastructure in the project area.

10. The success of a marketing project in terms of volume of demand, project inputs (raw materials, energy, contracts), labor, technical and technological.

11. Project profitability by estimating the cost of the project, foreign or local financing, estimating project returns and adaptations in a typical year.

The economic and public policies of the government and how to deal with them, the impact of this project through the economic and productivity data, the impact of the project on the area where located it, with social impact through determine the social returns and their impact on community development to help decide the approval of establishment and complete the detailed study.

2. Practical Framework / Preliminary feasibility study for the 400-bed hospital project – Diwaniya:

### **2-A : Adapting to development plans.**

The vision of the National Development Plan (2013-2017) ("Healthy Society and Healthy Population") includes the objective of (upgrading the health services infrastructure and the ability to cover the design of national programs that maintain the health of the community members and provide high quality services. (Ministry of Planning, 2013: 28 , 171 respectively)

### **2-B : Proposed alternative funding sources instead of government funding from the investment budget**

The project was allocated 135 million dollars of investment allocations in 2006. However, Since 2014 Iraq be faced with a double shock, first the Conflict with the terrorist organization (ISIS) and the occupation of some provinces by the terrorist organization, second, World oil prices fall in the rate of 50%. Which was reflected in the balance of payments deficit and the government budget deficit due to the decline in oil revenues, which amounted to (39) trillion Iraqi dinars and non-oil revenue amounted to (5) trillion Iraqi dinars against total spending amounted to (54) trillion Iraqi dinars, including (41) trillion Iraqi dinars for expenses and salaries, (31) trillion Iraqi dinars investment spending. (International monetary fund, 2016 : 1 , 3 respectively).

.which necessitated the preparation of several scenarios for funding sources, which were as follows:

A. Government investment expenditure.

B. Public-private partnership.

C. Private investment under the Investment Law No. (13) of 2006.



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**First: Determinants of the investment climate according to the legal framework**

The legal framework	Adjustment or not	Justifications
Public budget 2017	Incompatibility with government spending due to disability	Article (1) Total revenues (82,019) trillion dinars Article (2) First: A- Total expenditure (107,089) trillion dinars, including (28,531) trillion dinars Second: planned deficit (25) trillion dinars the actual allocation of investment expenditure (3) trillion dinars
Public budget 2018		Article (1) First: Total revenues (91,643) trillion dinars Article (2) First: A- Total expenditure (104,158) trillion dinars, including (24,650) trillion dinars Second: planned deficit (12,514) trillion dinars the actual allocation of investment spending (12) trillion dinars
Public-Private Partnership	-	The absence of a valid law
Investment Law No. 13 of 2006	Adjustment	Article (2) First: To encourage investment and technology transfer to contribute to the development to develop and expand the production and service base. Third: Provide job opportunities for Iraqis. Article (7) Third: A- The Iraqi or foreign investor has the right to lease and rent the land or the land from the state or the private sector and mixed to establish investment projects for a period not exceeding (50) renewable, etc. (G) It is permissible to invest in suspended projects in all sectors of a strategic, federal, etc. (I) oblige local authorities to deliver external infrastructure services to the boundaries of investment projects; Article (15) Fourth: Hotels, tourist institutions, hospitals, health, and educational centers shall be granted additional exemptions from the import duties of furniture, furniture, etc. Article (32) (B) Public-private partnership projects, including public sector projects, shall include contracting, rehabilitation, operation, and establishment with the private or mixed sector, etc.

**Secend: Environmental Effects**

Medical waste is considered part of hazardous waste, because of its negative effects on the health of workers in health institutions, on society and public health, if not managed properly.

According to the World Health Organization, hospital waste has been classified as:



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1. Ordinary or household waste: It includes food waste, some paper, plastic and so on.
2. Waste hospitalization and medication: two types.
  - A) Non-sharp used equipment (Replaceable dressings, replacement gypsum, medicine and injection cans, cotton, adhesive).
  - B) Sharp used equipment (glass, needles, blades)
3. Waste surgery: includes two types.
  - A) Surgery residues (amputated organs, appendages, skin, laboratory specimens, bones)
  - B) Postoperative residues (plastic bags for biological liquids, laboratory residues from biological samples)
4. Inspection and detection equipment: film boxes, some materials used in detection laboratories, imaging materials and radiographic films.
5. Recovered, residual or obsolete drugs and solutions.
6. Medical waste is an important cause of illness or death. The main risks that may result from infectious diseases such as viral hepatitis. There are also many chemical medical wastes and treatments that are considered hazardous wastes, as some of them may be toxic .

To avoid this, the hospital must include the following:

- 1) Waste incinerators: Working at temperatures above 400 ° C to avoid being a source of toxic gas emissions such as carcinogenic dioxin.
- 2) Treatment of incinerator ash: which contains a percentage of toxic heavy elements and pathogens thrown within the household waste in landfills and thus makes a significant negative impact on the environment in terms of pollution and transmission of diseases.
- 3) Dealing with chemical residues.
- 4) Reducing the pollution of wastewater with liquid wastes resulting from remedial activities:
  - Sterilize patients' body fluids resulting from treatment by dry heat or steam.
  - Never discharge of pharmaceutical waste into sewage.
  - Chemical treatment of toxic drugs used in the treatment of tumors for the purpose of deactivating them before discharging sewers.

Third: Study of the service project market.

▪ Health status of the study area (Diwaniya governorate) in terms of diseases: A study was carried out on the most common rates of diseases experienced by members of the community and the number of those who are treated abroad due to the lack of specialized hospitals to treat them, as well as the lack of medical staff from the approved standard. Thus increasing the depletion of foreign exchange required for development, see tables (1) (2), where the increase in the incidence of brain diseases, tumors of cancer and heart diseases with the high numbers of people treated abroad for these diseases. Noting the high rates of Cancer disease in the provinces of Najaf and Babylon, respectively.



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▪ The size of the competition for the project in terms of the number of hospitals available: For the purpose of indicating the importance of the need to establish a public hospital, a statistical study was conducted on the number of hospitals in the governorates covered by the study, as in Table (3), which showed the following:

-The number of hospitals in some of the governorates studied during the period from 2006 to 2017 increased by 13 in Babil Governorate followed by Najaf 10 hospitals generally.

-The number of public hospitals has increased in comparison with the number of private hospitals except for the Babil governorate, where the number of private hospitals has increased from (2) to (5) with an increase of (3) hospitals during the same period mentioned.

-The percentage of hospitals per 100,000 inhabitants was the highest in the Najaf governorate (1%) while the other governorates maintained constant rates or increased at a low rate. However, the overall rate is still below internationally approved standards with a deficit of 99.4%.

Table (4) shows the medical specialty of the existing hospitals, the majority of which are public hospitals (educational and non-educational), As well as the decline in the hospital during the period (2006-2017) in a number of studies governorates (Diwaniya, Wasit, and Muthanna). With reference to the absence of specialized centers for the treatment of diseases in the table (1).

▪ Studying current and future demand.

**1. Population and population growth rate:** For the purpose of determining the actual need and predicting future demand, it is necessary to know the expected number of population in the middle and long term, Table 5, where the increase in population is expressed at varying rates in the study area. This means that there is a lack of health service compared to population growth rates, therefore, needs to be established.

**2. Studying the current demand according to the proportions of bed work:**

-In terms of the total number of beds: The disability in the non-achievement of the standard (bed per 1000 inhabitants) in Diwaniya Governorate is 99% despite the increase in the total number of beds (34.9%) during the period (2006-2017) Which means an increase in the deficit due to the failure to meet the standard and population growth.

- In term number of ready bed according to standards: Based on the previous information, and in spite of the increase in the number of beds prepared, they did not achieve the approved criteria in evaluating the quality of medical service, where the rates of the prepared beds in 2017 (0.09%, 0.13%, 0.10%, 0.12% and 0.12% Sequence of Governorates)<sup>1</sup>.

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<sup>1</sup> Calculated according to the equation ( = number of beds / population \* 1000)



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- In terms of percentage of bed occupancy: This criterion contradicts the previous criterion, even though did not achieve the criteria of the number the beds per 1000 inhabitants. The occupied beds percentage in the hospitals of each province is low in 2017 (53.3%, 49.6%, 42.7% , 40.5%, 46%). Which indicates that the health services provided do not meet the needs of the community members as well as the lack of quality of service provided and available technology.

▪ Number Medical professionals: Tables (8 and 9) show the comparison of existing number with the approved criteria for the number of doctors and nursing staff:

- Failure to achieve the approved standard for the number of medical and nursing staff in all the governorates covered by the study.

- The high deficit in each of the governorates (Diwaniya, Wasit, and Muthanna).

Fourth: justification for establishing a project.

• The investment idea

The Diwaniya hospital building with a capacity of 400 beds on an area of (28) Acres. The total area of the building is 71098 m<sup>2</sup> and the hospital area is 57000 m<sup>2</sup>.

For the purpose of offering it as an investment opportunity, the hospital will be with a capacity (100) beds of building area (28000) m<sup>2</sup> in two floors including the following sections:

Specialized clinics, Children section, Surgery Department, Radiology, pharmacies and laboratories, Nursing, Intensive care, Specialized centers, Emergency section, and Services section.

- Provide advanced medical service in various medical fields (internal, Cardiology, Oncology, Dermatology & hair transplantation, Pediatric, Obstetrics & Gynaecology, Ear, Nose and Throat (ENT), Ophthalmologist, Neurology, Nephrology, Urology, dentistry, etc.).

- Providing specialized medical staff with high efficiency covering part of the expected shortage in the province of Diwaniya and nearby governorates through the Faculty of Medicine.

- Providing job opportunities and employment of specialized manpower, which contributes to reducing unemployment in the governorate as well as providing them with skills in new areas and learning about modern technologies that present challenges to the reality of the current work.

- Providing modern Surgery rooms, thus reducing the pressure on the Surgery of the Diwaniya Hospital and it's waiting lists.

- Upgrading the quality of medical care provided by creating a private hospital to be a center of education and conversion in medicine and surgery.

- Providing the necessary facilities to meet the basic requirements of workers, patients, escorts and visitors.



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**Fifth: Financial study**

The project includes the construction of the main hospital building consisting of two floors with an area of (28000) m<sup>2</sup> and the establishment of a university in the area (10000) m<sup>2</sup>.

- Construction costs

Value: billion dinars

No	Details	Area m <sup>2</sup>	Cost of building m <sup>2</sup>	Cost
1	The main building	28000	1000000	28000000000
2	College buildings	10000	400000	400000
3	Services building	2000	400000	800000
	<b>Total</b>			<b>3,280000000</b>

- Investment cost

Value: billion dinars

1	Building cost	32,800,000,000
2	Medical equipment cost	25,779,420,000
3	Auxiliary equipment cost	3,695,000,000
4	Transportation cost	325,000,000
5	Furniture cost	500000000
6	Infrastructure cost	1,000,000,000
7	Land cost	1,000,000,000
8	Designs cost	704100000
	<b>Total</b>	<b>65803520000</b>

Value: billion dinars

No	Details	Cost
1	Capital costs	65803520000
2	Fixed operating costs per year	4931405260
3	Variable operating costs per year	8818971000
4	Replacement costs	25000000000

- Return on investment

The study assumed the Cost of services provided by the hospital was based on preliminary hypotheses and lower than the private hospitals. It was assumed that the occupancy rate of the hospital between 60-70% in all departments of the hospital. Accordingly, the expected annual income is as follows:

Value: billion dinars

No	Details	Revenue
1	Hospital Revenue	15748876250
2	College Revenue	8750000000
3	<b>Total</b>	<b>24498876250</b>

- Summary of costs and revenues

Value: billion dinars



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University Revenue	Hospital Revenue	Total Revenues	Fixed operating costs	Variable operating costs	Capital Costs
8.750.000.000	15.748.876.250	24.498.876.250	4.931.405.260	8.818.971.000	65.803.520.000

**Sixth: Economic study for the project**

-Capital recovery period (4-5 years).

-Providing 217 jobs in different specialties (medical, administrative, services, etc.)

-Raise the bed occupancy rate allocated for each 1000 people according to international standards by providing health services that meet the needs of the community members

Conclusions and recommendation

Conclusions:

1. The study showed a decrease in the percentage of occupied beds within the study area which reached (40-53%) in 2017, Despite the large deficit in the prepared bed to use due to the lack of all the necessary health services hospitalization for a number of diseases with high casualties as well as the decline in technology used and low level of medical care compared to neighboring countries Which resulted in the investment decision to establish a hospital of 100 beds in the province of Diwaniya.

2. The study did not include a comparison of the cost of treatment in Iraq and abroad due to the lack of statistics in this regard.

3. The study showed that the health services provided to the members of the society were not accomplished (the population growth rates were not considered) due to the following indicators:

- The percentage of Shortage in the number of hospitals and their specialties (99%)

- Percentage of shortage in the number of beds that are ready for use (98%)

- The percentage of the lack in the number of doctors (90-94%)

- The percentage of the lack in the number of nursing professions (64-82%)

4. The study showed that the investment project recovers capital costs within (4-5) years.

5. The feasibility study of the investment project ( 100-bed hospital) is a preliminary feasibility study for adoption in making the investment decision to continue the idea of the project and prepare the detailed economic & technical study (Figure 1).

**Recommendations**

1. Preliminary feasibility study based on the statistics and financial accounts necessary to make the investment decision showed the need of Diwaniya governorate and the neighboring governorates (Muthanna, Wasit, Babil and Najaf) for the investment project of hospital and specialized medical centers



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With modern equipment required to upgrade the health service as well as to fill the lack caused by high population growth.

2.The Ministry of Health should complete statistical data on the cost of treatment in public hospitals, health centers, private hospitals and pay for treatment abroad for a number of countries where the Iraqis go for treatment.

3.Iraq faces high rates of population growth, which necessitates paying attention to health services provided to society members as well as quality.

4.Due to the government's increasing burden of development and reconstruction in exchange for the limited financial resources, it is possible to proceed to complete the hospital through the Investment Law No. 13 of 2006.

5.The Ministry of Health and in coordination with the relevant authorities have to Prepare a guidebook on hospital construction costs to use in feasibility studies.

6.The ministry of health can proceed with the preparation of an economic and technical study of the Diwaniya Hospital (100 beds)

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17. The federal budget law for the year 2006, at [www.mof.gov.iq](http://www.mof.gov.iq)  
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**Table (1): The top ten mortality rates in Iraq and the number of patients treated abroad.**

No	Diseases	Percentage of diseases					Number of patients treated outside Iraq				
		2006	2014	2015	2016	2017	2006	2014	2015	2016	2017
1	Stroke	-	10.08	10.6	10.6	10.38	-	-	-	-	-
2	Cancer	-	-	9.4	9.05	9.28	-	-	330	232	47
3	Ischemic heart	-	8.33	9	8.38	9.34	-	-	485	425	654
4	heart attack	-	7.7	8.6	8.2	8.84	-	-			
5	Renal Failure	-	5.7	6.4	6.01	6.06	-	-	-	-	-

(-) means no data.

**REFERENCE:** Statistical Report of the Ministry of Health for the years 2014, Table (3-5): 50, 2015 (Table 3.19) and (8.5): 71 and 268. , 2016, tables (3-19) and (9.5): 60 and 274 respectively, 2017, tables (2-23) and (10-1): 22 and 109, respectively

**Table (2): Percentage of cancerous tumors and heart disease by Iraqi governorates.**

No	Governorates	Cancer incidence rate					Percentage of heart disease				
		2006	2014	2015	2016	2017	2006	2014	2015	2016	2017
1	Diwaniya	-	-	59.01	-	62.77	-	-	-	-	-
2	Babylon	-	-	67.81	-	69.22	-	-	-	-	-
3	Wasit	-	-	53.27	-	63.46	-	-	-	-	-
4	Muthanna	-	-	46.61	-	60.74	-	-	-	-	-
5	Najaf	-	-	69.72	-	76.28	-	-	-	-	-

(-)Means no data.

**REFERENCE:** The table was prepared by the researchers depend on the statistical reports of the Ministry of Health for 2015, Table (5-30): 202. 2017, table (5-34): 226.



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**Table (3): Number of existing hospitals in terms of ownership.**

Governorates	No. government hospitals					No. private hospitals					Total					Percentage of hospitals per 100,000 population				
	2006	2014	2015	2016	2017	2006	2014	2015	2016	2017	2006	2014	2015	2016	2017	2006	2014	2015	2016	2017
Diwaniya	5	7	8	8	8	3	3	3	3	3	8	10	11	11	11	-	0.6	0.6	0.6	0.6
Babylon	8	15	15	17	18	2	3	3	4	5	10	18	3	21	23	-	0.8	0.8	0.8	0.9
Wasit	9	8	8	8	8	1	0	0	0	1	10	8	8	8	9	-	0.5	0.6	0.6	0.6
Muthanna	5	4	4	4	4	1	0	0	0	1	6	4	4	4	5	-	0.5	0.5	0.5	0.5
Najaf	5	10	11	13	14	3	3	4	4	4	8	13	5	17	18	-	0.7	0.8	0.9	1.0

(-) means no data.

**REFERENCE:** The table was prepared by researchers to depend on statistical reports of the Ministry of Health for the years 2006, Table (19), (47) and (71): 76, 154 and 230, 2014, Table (5.1): 116, 2015, Table (5-3): 142. 2016, Table (5.1): 134. 2017, table (5.1): 159.

**Table (4): Number of existing hospitals in terms of medical specialization.**

Governorates	public hospitals					Pediatric hospitals					Obstetrics & Pediatric hospitals					Obstetrics & Gynaecology hospitals					Other Specializations				
	2006	2014	2015	2016	2017	2006	2014	2015	2016	2017	2006	2014	2015	2016	2017	2006	2014	2015	2016	2017	2006	2014	2015	2016	2017
Diwaniya	7	4	4	4	4	1	1	1	1	1	-	1	1	1	1	0	1	0	0	0	0	0	0	0	0
Babylon	7	9	9	10	11	1	2	2	2	2	-	1	1	1	1	0	1	1	1	1	1	1	1	1	1
Wasit	7	6	6	6	6	1	0	0	0	0	-	1	1	1	1	1	1	1	1	1	0	0	0	0	0
Muthanna	4	3	3	3	3	0	0	0	0	0	-	1	1	1	1	1	0	0	0	1	1	0	0	0	0
Najaf	7	7	6	6	7	0	0	0	0	0	-	1	1	1	1	1	0	0	0	0	0	0	0	0	0

(-) means no data.

**REFERENCE:** The table was prepared by researchers depend on statistical reports of the Ministry of Health for the years 2006, table (21): 77-80. 2014, Table 5.2 (2). 2016, table (5-2): 135. 2017, table (5-2): 160.



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**Table (5): Percentage of household occupancy in a number of governorates.**

Governorates	Total number of beds					No. of beds ready for use					Percentage of the total bed per 1000 inhabitants					Percentage of household occupancy				
	2006	2014	2015	2016	2017	2006	2014	2015	2016	2017	2006	2014	2015	2016	2017	2006	2014	2015	2016	2017
Diwaniya	1082	1398	1415	1419	1460	1082	1164	1115	1160	1183	-	1	1	1	1	-	65.8	63.9	52.4	53.3
Babylon	1316	2199	2315	2428	3041	1316	1900	2022	2107	2671	-	1	1	1	1	-	67.2	80.9	62.5	49.6
Wasit	1431	1757	1757	1762	1756	1350	1408	1402	1415	1404	-	1	1	1	1	-	50.7	52.3	42.6	42.7
Muthanna	912	1233	1197	1196	1161	904	1118	1079	1078	1023	-	1	1	1	1	-	44.4	45.2	38.1	40.5
Najaf	941	1797	1916	1196	2095	919	1456	1574	1664	1735	-	1	1	0	1	-	68.2	62.8	51	46

(-) means no data.

**REFERENCE:** The table was prepared by the researchers depend on statistical reports of the Ministry of Health for the years 2006, table(20):7. 2014, table (5-3): 119, 2015, table(5-3):145. 2016, table(5-3):137 and 2017, table (5-3): 162 respectively .

**Table (6): Population and Population Growth Rate**

Governorates	Population			Population Growth Rate 2017	annual increase Expected	Expected population In 2030
	2007	2014	2017			
Diwaniya	165156	1.220.333	1.250.169	2.6%	32.504	1.737.729
Babylon	1064950	1.953.184	1.999.034	3 %	59.971	2.898.599
Wasit	990483	1.303.137	1.335.230	2.9 %	38.712	1.915.910
Muthanna	614997	770.476	788.262	3.2 %	25.224	1.166.637

**REFERENCE:** The table was prepared by the researchers depend on statistical reports of the Ministry of Health for the years 2014, table (1-1), 16 and 2017, tables (1-1) and (1-4): 17 and 21 respectively and the report of population projections 2007, table(2): 9.

**Table (7): The deficit, actual and future need expect to 2030 for hospitals.**

Governorates	Existing No.	Actual need 2017	Deficit	Expect need 2030	Expect deficit
Diwaniya	1183	4276.1426	3093.1426	10262.74224	9079.74224
Babylon	2671	6839.8004	4168.8004	19151.44112	16480.44112
Wasit	1404	4566.625	3162.625	12786.55	11382.55
Muthanna	1023	2697.3662	1674.3662	12407.88452	11384.88452
Najaf	1735	4874.1822	3139.1822	19984.14702	18249.14702

**REFERENCE:** The table was prepared by the researchers depend on tables (3, 4, 5 and 6).



**The investment Decision Making According to the Preliminary Feasibility Study for the 100-Bed Teaching Hospital - Service Sector in Diwaniya Governorate (Case Study)**

**Table (8): Number of doctors and nursing staff for 2017.**

Governorates	Specialist doctor	Non-specialist doctor	dentist	Pharmacist	Nurses	Total
Diwaniya	297	626	261	363	4577	6124
Babylon	649	891	677	805	5699	8721
Wasit	243	583	275	387	2609	4097
Muthanna	196	331	164	257	1467	2415
Najaf	449	816	416	689	4490	6860

REFERENCE: The table was prepared by researchers depend on the statistical report of the Ministry of Health for 2017. Tables (6.3) (6-7) (6-9) (6-11): 241, 260, 263 and 267, respectively.

**Table (9): Percentage of doctors and nursing staff for 2017.**

Governorates	Percentage of doctors	Percentage of dentists	Percentage of pharmacists	Percentage of nurses
Diwaniya	8 %	2.1 %	2.9 %	36.4 %
Babylon	8.1 %	3.4 %	4 %	28.3 %
Wasit	6.4 %	2 %	2.9 %	19.4 %
Muthanna	6.8 %	2.1 %	3.2 %	18.5 %
Najaf	9.7 %	2.9 %	4.8 %	31.3 %

REFERENCE: The table was prepared by the researchers depend on the statistical report of the Ministry of Health for 2017. Tables (6.3) (6-7) (6-9) (6-11): 241, 260, 263 and 267, respectively.



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**Table (10): shows the deficit, actual and future need expected to 2030 for doctors in the province and neighboring provinces.<sup>2</sup>**

Governorates	Existing No.2017	Actual need 2017	Deficit 2017	Expect need 2030	Expect deficit
Diwaniya	1229	2892.6847	1663.685	6942.44328	5713.44328
Babylon	2573	4626.9238	2053.924	12955.38664	10382.38664
Wasit	1784	3089.1875	1305.188	8649.725	6865.725
Muthanna	701	1824.6889	1123.689	8393.56894	7692.56894

REFERENCE: The researchers prepared the table depend on the tables (5 and 8).

**Table (11): shows the deficit, actual and future expect to need to 2030 for health professionals in the province and neighboring provinces.<sup>3</sup>**

Governorates	Existing No.2017	Actual need 2017	Deficit 2017	Expect need 2030	Expect deficit
Diwaniya	2632	5625	2993	7819	5187
Babylon	4207	8995	4788	13043	8836
Wasit	3031	6008	2977	8621	5590
Muthanna	1043	3547	2504	5249	4206

REFERENCE: The researchers prepared the table depend on the table (9).

<sup>2</sup> Calculated according to the equation:  $N.D = P / (10,000 / K)$ .

Where: N.D: number of doctors \*, \* P: population and K: number of doctors (23) for 10,000 person.

According to the World Health Organization, countries with less than 23 doctors per 10,000 population will likely not be able to achieve adequate coverage rates for primary health care services.

<sup>3</sup> Calculated according to the equation:  $N.D = P / (10,000 / K)$ .

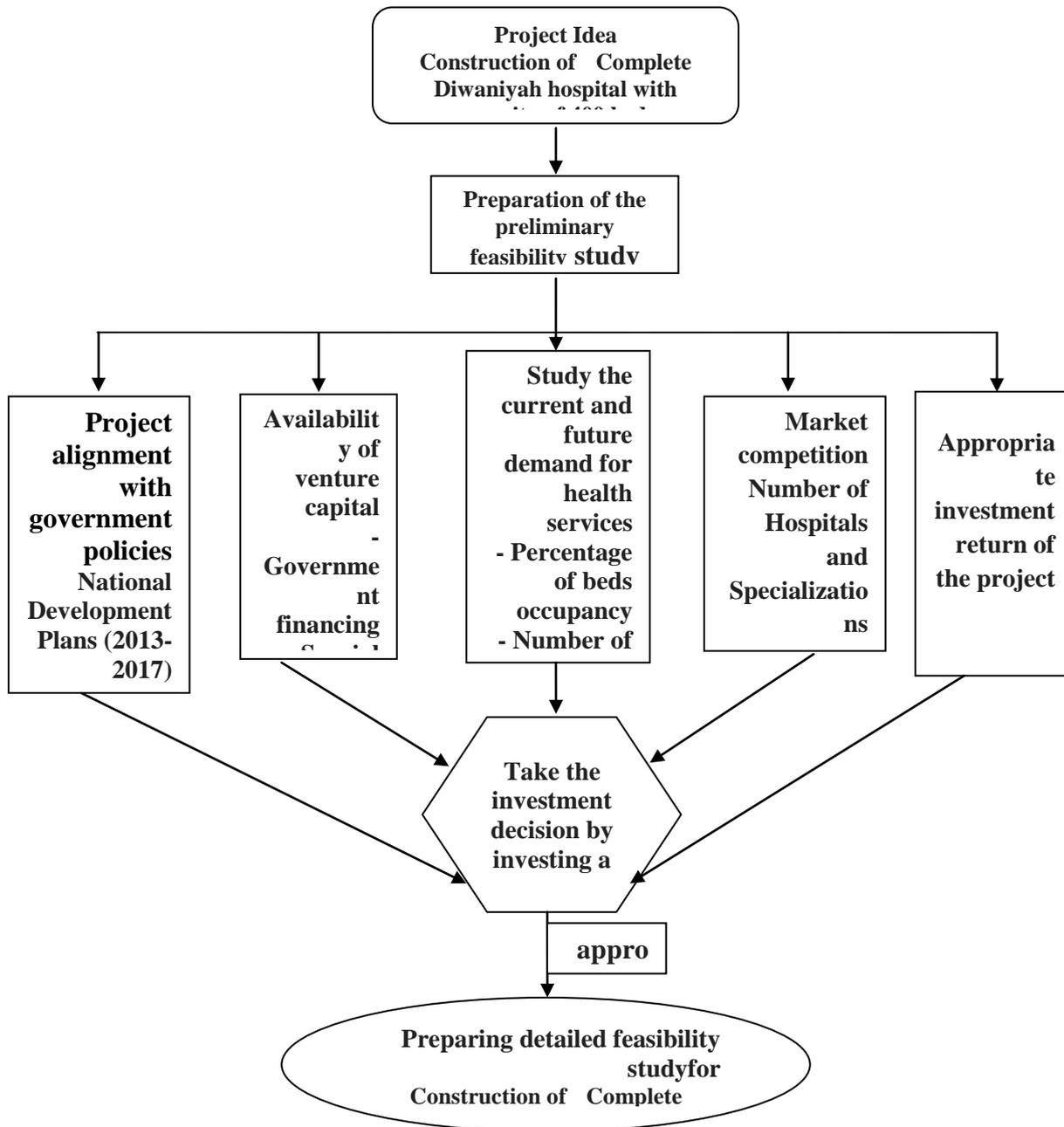
N.D: number of Health professionals, P: population and K: number of Health professionals (45) for 10,000 people.

In terms of nursing coverage, global estimates indicate that the average rate is currently estimated at 45 nurses per 10,000 population with global disparities in this regard, where the rate in Africa is 11 and in Europe to 79 per 10,000 population.



## The investment Decision Making According to the Preliminary Feasibility Study for the 100-Bed Teaching Hospital - Service Sector in Diwaniyah Governorate (Case Study)

Figure (1) The mechanism for making investment decisions (Musa and Salam,2016:35)





## The investment Decision Making According to the Preliminary Feasibility Study for the 100-Bed Teaching Hospital - Service Sector in Diwaniya Governorate (Case Study)

اتخاذ القرار الاستثماري وفق دراسة الجدوى الأولية لقطاع خدمي / مستشفى تعليمي

سعة 100 سرير في محافظة الديوانية (حالة دراسية)

زينتة مؤيد محمود / رئيس ابحاث / وزارة التخطيط

محمد جاسم محمد / مهندس اقدم / قسم الشؤون الهندسية - محافظة الانبار

### المستخلص

تبرز أهمية دراسة الجدوى الأولية باتخاذ القرار الاستثماري بالتخلي عن المشروع او استكماله ، وفق عدة مؤشرات منها حجم الطلب على الخدمة المقدمة ونوعها وخصائصها وما تقدمه من عائد مالي بالتحول نحو دراسة الجدوى التفصيلية. ولما كان القطاع الصحي في العراق من القطاعات الخدمية التي تواجه اليوم عجز مستمر نتيجة تزايد النمو السكاني والامراض والاصابات الناجمة عن الحروب والنزاعات مقابل عجز تمويلي حكومي باستكمال مبنى مستشفى الديوانية والبالغة سعتها (400 سرير) والذي انجز جزء من اعماله المدنية بنسبة وصلت الى 19% .

استوجب ذلك اعداد دراسة جدوى اولية للتأكد من عدم وجود مشاكل جوهرية تعيق استكمال استثمار المشروع من قبل القطاع الخاص (الوطني او الاجنبي) بالاستناد الى التشريعات النافذة والدراسة السوقية والتي بينت الحاجة لاستثمار مستشفى سعة (100) سرير موزعة بين (80) سرير للرفود و (20) سرير للطوارئ الى جانب عيادات استشارية ومراكز طبية متطورة لكافة الاختصاصات مع جامعة طبية تلبي الاحتياج من العجز في الملاكات الطبية والتمريضية بالاستناد الى المعايير المعتمدة . مع السعي لتوفير خدمات متميزة وبأسعار تنافسية مؤدية بذلك لتطوير القطاع الصحي في محافظة الديوانية والمحافظات المجاورة.

المصطلحات الرئيسية للبحث/ دراسة جدوى اولية، دراسة اقتصادية، مستشفى الديوانية.