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**Pre-Feasibility Study**  
**Medical Intravenous Solutions Production Plant**  
**Amman**

April, 2017

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## 1. Executive Summary

This study aims to determine the Pre-Feasibility for establishing a specialized factory for the manufacture of intravenous solutions in the Muwaqqar Industrial city in the capital Governorate due to increased demand for intravenous solutions due to the rise of medical cases and medical operations in the Kingdom. The following table shows the preliminary indicators of the project.

**Table 1: Initial Indicators of the Project**

<b>Project Name</b>	Medical Intravenous Solutions Production Plant
<b>Sector</b>	Industrial Sector - Pharmaceutical Industries
<b>Governorate</b>	The capital
<b>Region</b>	Al Muwaqqar Industrial City
<b>Products/Services</b>	<ul style="list-style-type: none"> <li>Intravenous solution</li> </ul>
<b>Project Description</b>	The project is to establish a specialized factory for the manufacture of intravenous solutions, that contains sodium chloride including normal saline, dextrose normal saline and ringer lactate
<b>Target Market</b>	<ul style="list-style-type: none"> <li>Public and private hospitals</li> <li>Public and private health centers</li> <li>Hospitals and health centers in neighboring countries.</li> </ul>
<b>Investment Cost</b>	The investment cost of the project is JD 3.2 million
<b>The average return on investment</b>	The average return on investment during the ten years is about 11.5%
<b>Internal Rate of Return</b>	The internal rate of return for the project is about 18.2%
<b>Average added value of the project</b>	The average added value on the project during ten years is about JD 837 thousand
<b>Risk Assessment</b>	The Sensitivity Analysis indicates a low risk in case of 10% increase in investment cost, or 10% increase in operating costs, or 10% decrease in revenues.
<b>The Project Justifications</b>	<ul style="list-style-type: none"> <li>The growing demand for intravenous solutions due to the high incidence of medical conditions and medical operations of all kinds and the large numbers of Syrian refugees and residents from other Arab countries</li> <li>The absence of local projects for the production of intravenous solutions and the dependence of the local market on imports to meet its annual needs</li> <li>Export potential for target markets</li> </ul>

	<ul style="list-style-type: none"><li>• Recruitment of local labor</li></ul>
<b>Partners/ Stakeholders</b>	<ul style="list-style-type: none"><li>• Food and Drug Administration</li><li>• The Ministry of Environment</li><li>• Ministry of Health</li><li>• Hospitals / public and private medical centers</li></ul>

## 2. The Macroeconomic Environment

### 2.1 An Overview of the Hashemite Kingdom of Jordan

The Hashemite Kingdom of Jordan is a landlocked country surrounded by land except at its southern extremity at the port of Aqaba, where that area is the only sea exit area in Jordan. The Kingdom is bordered at its west side by Palestine and the Mediterranean Sea, at its south and east by the Kingdom of Saudi Arabia, at north east by Iraq and at north by Syria.

Figure 1: Map of the Hashemite Kingdom of Jordan



Jordan is marked by three climatic zones from west to east including the Jordan Valley, most of which lies below sea level and is considered subtropical, and upland areas to the east of the Jordan Valley, ranging in height from 100 to 1500 meters above sea level and this is one of the areas dominated by Mediterranean climate, and the desert areas stretching to the east of the highlands.

The total area of the Kingdom is approximately 89.3 thousand square kilometers, and the semi-desert conditions prevail in over 80% of this area where there are some wet lands settings like Azraq Basin.

The kingdom is divided administratively into twelve governorates distributed into three regions: the Northern Region (includes the governorates of Irbid, Ma'raq, Jerash and Ajloun) while the Central Region (includes the governorates of the capital, Zarqa, Balqa, Madaba) and the Southern Region (includes the governorates of Karak, Tafila, Ma'an, Aqaba), and the major cities are Amman (the capital), Zarqa and Irbid.

## 2.2 Population

Based on the General Census of Population and Housing in 2015, the population in the kingdom amounted to about 9.5 million people with a population density of 107.3 inhabitants per km<sup>2</sup>, where the Capital City knocked off other governorates by population amounting to about 4 million people and a population density of 538.8 inhabitants per km<sup>2</sup>, mainly because Amman is the most attractive governorate for Jordanians and for those coming to Jordan from other countries, followed by Irbid Governorate with a population of 1.8 million people, and then Zarqa Governorate with a population of 1.4 million. Tafila Governorate which is considered to be the least populous governorate whose population is about 96 thousand people.

**Table 2: Number of population and population density in the Kingdom for 2015**

Governorate	Population (people)	Area (Km <sup>2</sup> )	Population density (people/ km <sup>2</sup> )
<b>Central Region</b>			
Capital	4007526	7,579	528.8
Zarqa	1364878	4761	286.7
Balqa	491709	1120	439.0
Madaba	189192	940	201.3
<b>North Region</b>			
Irbid	1770158	1572	1126.1
Mafraq	549948	26551	20.7
Jerash	237059	410	578.2
Ajloun	176080	420	419.2
<b>Southern Region</b>			
Karak	316629	3495	90.6
Tafeileh	96291	2209	43.6
Maan	144082	32832	4.4
Aqaba	188160	6905	27.2
<b>Total of Kingdom</b>	<b>9531712</b>	<b>88793.5</b>	<b>107.3</b>

Source: Department of Statistics, Jordan General Population and Housing Census, 2015

On the other hand, the population growth rate has reached about 3% in 2010 and increased to 9% during the years 2013 and 2014 and then dropped a little during 2015 to reach about 8%, according to demographic surveys for the Department of Statistics. The reason for the high growth rates is attributed to the influx of large numbers of refugees from Syria to the Kingdom which resulted in a marked decline in per capita real GDP index by 5.4% to JD 1,197.4, based on the Statements of the Central Bank of Jordan.

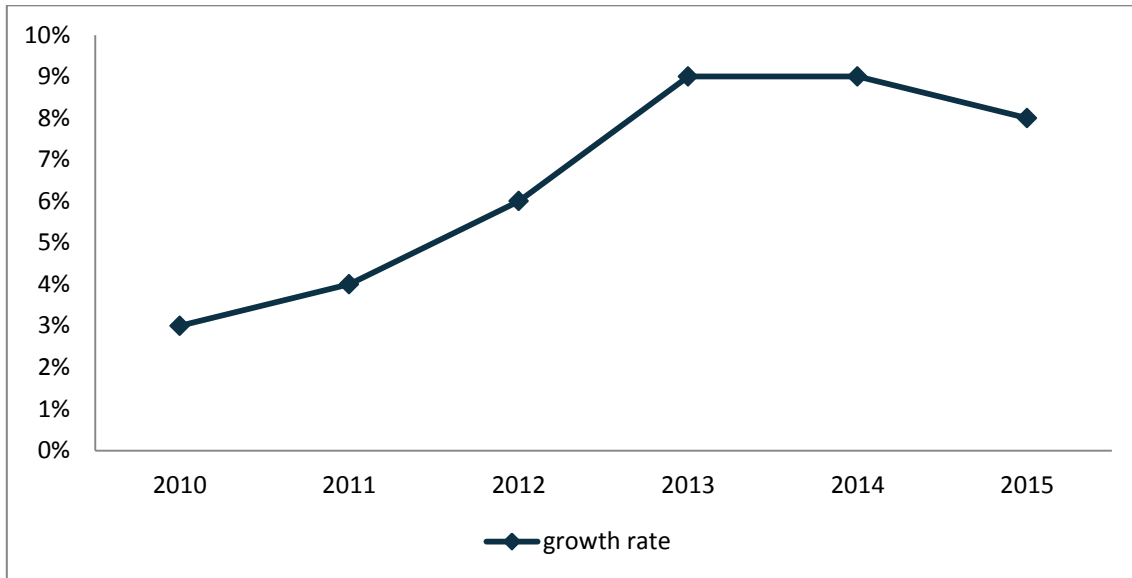
The unemployment rate among Jordanians also witnessed a rise by 1.1 percentage to reach to 13%, due to the structural imbalances that the labor market is suffering from and the acquisition of the low-paid foreign workers on a large number of new jobs in the economy, according to the Central Bank of Jordan.

**Table 3: Number of population and population growth in the Kingdom, thousand**

	2010	2011	2012	2013	2014	2015
population	6698.0	6993.0	7427.0	8114.0	8804.0	9531.7
growth rate	%3	%4	%6	%9	%9	%8

Source: Department of Statistics

**Figure 2: population growth rate in the Kingdom**



### **2.3 Economic Indicators in the Kingdom <sup>1</sup>**

Countries across the Middle East are still suffering from instability and closure or partial closure of borders; including the borders of important markets for the Kingdom's products. These factors led to a decline in the performance of many of the economic sectors, including the external sector, national exports, touristic income, and Foreign Direct Investment (FDI), and they contributed to a slowdown in the economic growth to about 2.4% in 2015, compared to 3.1% in 2014. The growth achieved in 2015 came from growth across several economic sectors, especially in the finance, insurance, and real estate services; the transport, storage, and communications services; the mining industry; the manufacturing industry; and the agriculture sector. These sectors contributed a combined 1.8 percentage points (or 75%) of the growth rate achieved during 2015, reflecting the diversity of the economic growth sources in the Kingdom.

Additionally, the general price level registered a decline in the prices of oil, commodities, and other related services in the global markets. Therefore, the general price level, measured by the relative change in the average consumer price index deflated by 0.9% in 2015, compared to the inflation of 2.9% in 2014.

The budget deficit, after aid, increased by 1.2% to a record 3.5% of GDP, compared with 2.3% in the previous year. In addition, the Balance of Payments' Current Account recorded a deficit of 8.9% of GDP, compared with 7.3% in 2014. At the end of 2015, the net public debt amounted to 22,847.5 million Jordanian Dinars (85.8% of the GDP), with an increase of 5.0% of the GDP. However, the total public debt reached 24,876.5 million Jordanian Dinars (93.4% of GDP). This increase resulted from financing both the general budget deficit and the guarantees for loans for the National Electricity Company and the Water Authority, as well as the slowdown of economic growth during 2015. The indebtedness of the National Electricity Company and the Water Authority recorded 6.7 billion Jordanian Dinars at the end of 2015.

On the monetary and banking front, most monetary indicators experienced positive development in performance in 2015, primarily in the Central Bank's foreign reserves, which maintained comfortable levels that amounted to about \$14.2 billion. The dollarisation rate decreased, which reflected positive demand for Jordanian Dinars in comparison to other major foreign currencies. With regards to the activities of licensed banks, the outstanding balance of credit increased by 9.5%, to reach 21,103.5 million Jordanian Dinars at the end of 2015. The total deposits registered with licensed banks increased by 7.7%, to reach 32,598.5 million Jordanian Dinars at the end of 2015. The increase in deposits came as a result of the high dinar deposits, which increased by 2,001.4 million Jordanian Dinars (8.3%), and higher foreign currency deposits, which increased by 336.1 million Jordanian Dinars (5.4%).

Furthermore, many of the external sector indicators registered a drop in performance in 2015 due to the deepening instability in the region and almost full closure of the borders with Iraq and Syria. However, the drop in oil prices in the global markets contributed to the decline in the Kingdom's imports bill for energy, as it dropped by 40.6%, which in turn contributed to a decline in total

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<sup>1</sup> The Central Bank of Jordan



imports and the trade deficit by 11.4% and 14.0%, respectively. Thus, the Current Account, excluding aid, declined to 11.9% of GDP, compared to 12.4% in 2014.

The Current Account deficit increased after aid, to reach 2,365.6 million Jordanian Dinars (8.9% of GDP) in 2015, compared with a deficit of 1,851.7 million Jordanian Dinars (7.3% of GDP) in 2014. This decline is due mainly to the decline in total exports by 6.6% and the decline in surplus in the services account by 27.7%, as touristic income decreased by 7.1%, and the decline in the surplus in the current transfers account decreased as a result of reduced foreign aid.

Capital and financial accounts resulted in a net inflow of 1,593.7 million Jordanian Dinars in 2015, compared to 909.0 million Jordanian Dinars in 2014; this was due to the Kingdom's higher net obligations towards the outside world. Foreign Direct Investment registered a net inflow of 909.4 million Jordanian Dinars, and the reserved investment registered an inflow of 918.4 million Jordanian Dinars due to the Kingdom issuing Eurobonds that are worth \$2.0 billion in the global markets. The withdrawal of bank loans on behalf of the Central Bank increased the use of funds from the International and Arab Monetary Funds by 543.3 million Jordanian Dinars. This led to the registration of a surplus in the overall Balance of Payments of 328.7 million Jordanian Dinars during 2015, compared to a surplus of 1,550.7 million Jordanian Dinars during 2014.

According to the Central Bank of Jordan, the increased international investment at the end of 2015 showed an increase in the external net liabilities of the Kingdom, which reached 24,357.5 million Jordanian Dinars, compared with 22,578.8 million Jordanian Dinars at the end of 2014. This was due to an increase in the external balance of assets and financial liabilities for all of the economic sectors in the Kingdom, which reached to 18,657.9 million Jordanian Dinars and 43,015.5 million Jordanian Dinars, respectively, during 2015.

**Table 4: main economic indicators 2011 to 2015 in millions of dinars**

	2011	2012	2013	2014	2015
<b>Population (millions)</b>	6.993	7.427	8.114	8.804	9.532
<b>Unemployment rate</b>	12.9	12.2	12.6	11.9	13.0
<b>Production and Prices</b>					
GNP at current market prices	20,288.8	21,690.0	23,611.2	25,141.2	26,289.6
GDP at current market prices	20,476.6	21,965.5	23,851.6	25,437.1	26,637.4
The rate of growth in GDP at constant market prices (%)	2.6	2.7	2.8	3.1	2.4
The total national disposable income at current prices	23,743.5	24,774.9	28,424.5	30,302.1	30,234.7
The rate of growth in gross national disposable income at current prices (%)	4.7	-0.2	8.6	3.1	-2.4
Change in the index of consumer prices (%)	4.2	4.5	4.8	2.9	-0.9
The change in the GDP deflator (%)	6.4	4.5	5.6	3.4	2.3
<b>Money and Banking</b>					
Exchange rate of the Jordanian dinar to the US dollar	1.410	1.410	1.410	1.410	1.410
Money supply (P2)	24,118.9	24,945.2	27,363.4	29,240.4	31,605.5
Net foreign assets of the banking system	9,370.1	6,665.5	6,923.4	7,932.3	8,137.3
Net domestic assets of the banking	14,748.8	18,279.7	20,440.0	21,308.1	23,468.2

	2011	2012	2013	2014	2015
system					
Net debt of the government	6,701.4	9,461.3	10,494.8	10,473.9	11,386.4
Private sector debts (Residents)	14,925.0	15,953.6	17,222.5	17,852.8	18,704.5
Other factors <sup>(1)</sup>	-6,877.6	-7,135.2	-7,277.3	-7,018.5	-6,622.7
Deposits in dinars at licensed banks	19,119.1	17,711.1	21,003.0	24,013.1	26,014.5
Foreign currency deposits at licensed banks	5,258.8	7,258.6	6,590.2	6,247.9	6,584.0
Rediscount rate (%)	4.50	5.00	4.50	4.25	3.75
Treasury bills interest rate for 6 months (%)	3.232	3.788	-	-	-
<b>Public Finance</b>					
Total revenue and foreign aid	5,413.9	5,054.2	5,758.9	7,267.6	6,796.4
Ratio to GDP (%)	26.4	23.0	24.1	28.6	25.5
Total spending	6,796	6,878.2	7,077.1	7,851.1	7,722.9
Ratio to GDP (%)	33.2	31.3	29.7	30.9	29.0
Overall deficit/savings (on an accrual basis)	-1,382.7	-1,824.0	-1,318.2	-583.5	-926.5
Ratio to GDP (%)	-6.8	-8.3	-5.5	-2.3	-3.5
Net outstanding balance of the domestic public debt	8,915.0	11,648.0	11,863.0	12,525.0	13,457.0
Ratio to GDP (%)	43.5	53.0	49.7	49.2	50.5
Outstanding external public debt <sup>(2)</sup>	4,486.8	4,932.4	7,234.5	8,030.1	9,390.5
Ratio to GDP (%)	21.9	22.5	30.3	31.6	35.3
<b>Foreign Trade and Balance of Payments</b>					
Current account	-2,098.8	-3,344.9	-2,487.7	-1,851.7	-2,365.6
Ratio to GDP (%)	-10.2	-15.2	-10.4	-7.3	-8.9
Trade balance (Deficit)	-6,261.7	-7,486.6	-8,270.1	-8,495.6	-7,249.3
Ratio to GDP (%)	-30.6	-34.1	-34.7	-33.4	-27.2
Commodity exports	5,684.5	5,599.5	5,617.9	5,953.6	5,558.3
Imports of goods (FOB) <sup>(3)</sup>	11,946.2	13,086.1	13,888.0	14,449.2	12,807.6
Balance of services (net)	896.0	1,332.3	1,209.5	1,778.9	1,286.4
Income account (net)	-187.8	-275.5	-240.4	-295.9	-347.8
Current transfers (net)	3,454.7	3,084.9	4,813.3	5,160.9	3,945.1
Capital and financial account (net)	2,298.9	3,808.9	1,811.1	908.9	1,593.7
Direct foreign investment in Jordan (net)	1,055.0	1,074.3	1,281.2	1,426.7	905.1

Source: Monthly Statistical Bulletin, Central Bank of Jordan

1. Includes the debts of public and financial institutions and other factors, as shown in the Monetary Survey Agenda.
2. This represents the total balance of drawn loans, minus total repayments.
3. Does not include imports of non-resident entities.

## 2.4 The Jordanian Investment Environment

### Investment Law No. 30 for 2014

Investment Law no. 30 for 2014 is considered an appropriate legislative framework to attract foreign investments and stimulate local investments. It is considered a competitor to other investment laws in the region because it contains many advantages, incentives, and guarantees, and it offers a range of incentives and benefits in and outside the Development and Free Zones. The law includes a series of public provisions, such as foreign investment guarantees (depositing and withdrawal of capital, investment management, and transfers) and the inadmissibility of the disbarment of investment property. The law offers provisions to settle investment disputes, protection, and encouragement of mutual investment agreements between the Kingdom and other countries.

The following shows the major incentives granted by the law:

#### ❖ Incentives and Benefits outside the Development and Free Zones

- The production inputs for the industrial and crafts sectors are exempted from customs duties.
- The return of the general sales tax on the production inputs for the industrial and crafts sectors within 30 days.
- Production inputs and fixed assets of the industrial and crafts sectors are exempted from customs duties and are granted a reduction in general sales tax to 0%.
- Returning to the sales tax on the services needed to practice economic activity within 30 days.
- The goods that are necessary for the economic activities of the following sectors are exempted from customs duties and are subject to 0% general sales tax:
  - Agriculture and livestock, hospitals and specialised medical centres, hotels and touristic facilities, touristic entertainment and recreation centres, call centres, scientific research centres and laboratories, art and media production, convention centres and exhibitions, transfers and/or distributions and/or extraction of water, gas and oil derivatives, air transport, maritime transport, and railways.

#### ❖ Incentives and Benefits inside the Development and Free Zones

- 5% income tax on the income generated from economic activity within the Development Zone.
- 5% income tax on income generated from economic activity in the industrial sector.
- Tax exemptions that are granted in the Kingdom on goods and services exports.
- Reduction of sales tax to 0% on goods and services that are used by the establishment in order to exercise its activity inside the Development Zone.
- 7% sales tax on specific services provided by a registered company in the zone when these services are consumed in the zone.
- Exemptions from customs duties except for a specified number of goods.

❖ **The Reduction of Income Tax in the Least Developed Areas for Regulation No. 44 for 2016**

- The reduction of income tax in the least developed areas for Regulation No. 44 for 2016 was approved. It aims to create an attractive environment for investments that promote economic development through the reduction of income tax outside the Development Zones and in the least developed areas in the Kingdom. The regulation specified the areas that are considered least developed and identified the activities that are excluded from this reduction.
- Under the provisions of Articles 4 and 5 of this regulation, the areas that were categorised as least developed and enjoy the reduction in income tax are divided into four categories; each category enjoys a reduction in income tax on their activities for a period of 20 years.
- Category A includes the Northern Valley District, Deir Alla District, Shouneh Al-Janoubieh District, the Southern Valley District, Rweished District, the Northern Desert District, the North Western Desert District, Al-Azraq Province, Al-Jiza District except for the borders of the new Al-Jiza municipality, Al-Moakar District except for the borders of Al-Moakar municipality, and the Governorate of Aqaba except for the Aqaba Special Economic Zone. The reduction rate for this category is 100%.
- Category B includes the Governorates of Maan, Tafileh, Karak, and Ajloun. The reduction rate for this category is 80%.
- Category C includes the Governorates of Jarash, Mafraq, and Irbid except the borders of the Greater Irbid Municipality. The reduction rate for this category is 60%.
- Category D includes the Governorates of Madaba, Balqa, Amman except for the Greater Amman Municipality, and Zarqa except for the borders of Zarqa Municipality and Russaifeh Municipality. The reduction rate for this category is 40%.

❖ **Trade and Free Trade Agreements**

The most important agreements are:

- Jordan joining the World Trade Organisation in 2000, which led to the opening of the markets of 150 countries for Jordanian exports in goods and services, and provided new opportunities of access to other countries within a clear and transparent environment of laws, regulations, and procedures.
- A series of regional trade agreements, such as the Jordan Partnership Agreement with the European Union, Agadir Agreement, Free Trade Arab Agreement, the free trade agreement between Jordan and the European Free Trade Association, and the adoption of the Euro-Mediterranean simplification of the rules of the Origin System, which includes the decision to simplify the rules of the origins of Jordanian products between Jordan and the European Union came into effect on July 19, 2016, and will remain in effect until December 31, 2026.
- A series of bilateral trade agreements with many countries, such as the free trade agreement between Jordan and the United States of America, the Qualified Industrial Zones Agreement, the free trade agreement between Jordan and Singapore, the free trade agreement with Turkey, the free trade agreement with Canada, and many other agreements.
- Jordan has signed more than 35 agreements with Arab and foreign countries in order to prevent double taxation between Jordan and these countries, thus protecting investors' rights.
- The Agreement of Promotion and Protection of Investments and the Movement of Capital between the Arab Countries was signed in 2000 with 11 Arab countries who are members of

the Arab Economic Unity Council, in order to establish an appropriate environment for investments and economic cooperation between investors in the Arab countries, thus pushing and stimulating investment activities by providing encouragement and mutual protection for Arab investments.

### **Human Development Report for 2015**

The Human Development Report that was issued by the United Nations Development Program in 2015 showed that Jordan fell 3 points to number 80. Please note that Jordan's place on the Human Development Report index value has improved slightly.

### **Global Competitiveness Report**

The Kingdom's rank has improved by one point in the Global Competitiveness Report for the year 2016/2017, at 63 out of 138 countries compared to 64 out of 140 countries in the 2015/2016 report. It is considered an insignificant improvement, especially because of the reduction in the number of countries participating in this year's report. Amongst the Arab countries, Jordan was ranked after the United Arab Emirates, Qatar, the Kingdom of Saudi Arabia, Kuwait, and Bahrain, who were ranked 16, 18, 29, 34, and 39, respectively.

### **Doing Business Report**

In the Doing Business Report that was issued by the World Bank Group, Jordan is still ranked 118, up one rank from the 2016 report, because of the variation in the performance of the different sub-indicators. Jordan ranked ninth among the Arab countries; the United Arab Emirates was ranked first among the Arab countries at 26, followed by Bahrain at 63 and Oman at 66.

## 2.5 The Economic Environment in the short and medium term

Risks analysis implemented by BMI indicates that the Jordan's political and economic risks in the short and medium term are less than the overall average of the world and the Middle East. The state's risks and the operational risk are estimated to be within the acceptable levels. The international institutions' forecasts point out that the economic and foreign trade indicators are expected to achieve acceptable rates of growth with the exception of the continued increase in internal and external indebtedness.

**Table 5: Assessment of short and long-term risks**

	Long term		Short term		Operational risks	State risks
	political	Economic	political	economic		
Jordan	63.1	39.2	66.6	46.2	58.7	55.4
Turkey	60.2	49.4	58.4	56.9	55.9	56.1
Egypt	53.3	45	52.4	48.7	42.9	47.5
Lebanon	45.8	54	55.4	53.5	44.2	49.5
West Bank and Gaza	33.1	38.1	32.2	36.5	32.5	34.3
Syria	22.9	24.4	22.4	23.6	29.3	26.1
<b>Regional average</b>	<b>49.4</b>	<b>46.9</b>	<b>51.2</b>	<b>48.7</b>	<b>46.6</b>	<b>48.3</b>
<b>global average</b>	<b>64.1</b>	<b>50.7</b>	<b>61.3</b>	<b>51.9</b>	<b>49.8</b>	<b>54.6</b>

Source: the economy and state risks, IHS, 15/09/2016

**Table 6: The most important key economic indicators 2016-2020**

Indicator	2016	2017	2018	2019	2020
The growth rate of GDP	2.6	2.7	2.8	3.2	3.1
GDP (in USD billions)	39.6	42.1	44.8	47.8	50.9
Population (In millions)	9.8	10.1	10.4	10.7	11.0
Consumer Price Index (% change)	-0.7	1.8	3.3	4	3.2
Exports (in USD billions)	7.3	7.6	8.2	8.8	9.6
Imports (in USD billions)	18.3	19.2	20.1	21.3	22.8
Foreign direct investment, the net value (in USD billions)	1.5	1.5	1.6	1.6	1.7
Foreign direct investment, the net value (% of GDP)	3.7	3.7	3.6	3.4	3.3
Foreign exchange reserves (in USD billions)	13.9	14.9	15.7	16.8	17.7
Total external debt (in USD billions)	24.4	27.8	30.7	33.7	36
Total external debt (% of GDP)	61.6	66	68.6	70.4	70.6
Total external debt (% of foreign currency earnings)	127.3	138.3	143.6	147.5	147.8

Source: the economy and state risks, IHS, 15/09/2016

### 3. Market Study

#### 3.1 Project Description

The project is a plant for the production of intravenous fluids containing Sodium Chloride to be marketed and sold to the local health sector in order to meet the increasing demand for intravenous solutions due to the high incidence of various types of medical events and surgical procedures recorded in hospitals and the large numbers of Syrian refugees and expatriates From other Arab countries to the Kingdom for treatment. Hospitals and medical centers operating in various health sectors in the local market meet their current needs of intravenous solutions and purchase these solutions from drug stores that in turn import these products from abroad, due to the lack of local projects for the production of intravenous solutions at the present time.

#### 3.2 Expected Product Description

The project mainly produces the following medical intravenous solutions:

- Sodium Chloride (Normal Saline)
- Dextrose Sodium Chloride (Dextrose Normal Saline)
- Ringer Lactate

#### 3.3 Analysis of expected demand

##### The health Sector

The health sector in the Kingdom is considered one of the vital economic sectors, which have a distinguished reputation locally and regionally. It provides advanced technology and qualified human staff in most specialties and provide advanced and sophisticated treatment services, making it one of the most developed countries compared to neighboring countries in the Middle East.

The hospital sector in the Kingdom is characterized by its advanced infrastructure, hospital spread, high quality of medical services provided. It also has support services including pharmaceuticals, nurses and advanced medical laboratories. The Kingdom has 104 hospitals with (13,115 beds). In 2015 the number of beds reached 13 beds for every 10000 person in the Kingdom.

The following table shows the main indicators of the size of work in the hospitals of the Kingdom in 2015.

**Table 8: Key indicators of the volume of work in the kingdom hospitals for 2015**

Main indicaors	MoH	RMS	universities	Hospitals Private sector	Total
Number of hospitals	31	12	2	59	104
Number of beds	5,077	2,551	1,137	4,350	13,115

Main indicators	MoH	RMS	universities	Hospitals Private sector	Total
Number of admissions	369,538	185,008	75,177	256,802	886,525
Average patient stay period (length of stay)	3.1	4.1	3.9	2.1	-
Occupancy rate	65.1	81.2	71.4	42.4	-
Number of surgical operation	89,047	97,404	39,444	133,800	359,695

Source: Ministry of Health Annual Report, 2015

### **Demand for intravenous solutions**

The demand for intravenous solutions is influenced by the following factors:

- Population growth rate
- Number of hospitals, medical centers and beds available
- Number of registered medical conditions and surgical procedures performed in hospitals
- Number of Arab and foreign patients coming to the Kingdom for medical tourism.

The main uses of intravenous solutions were as follows:

- Nutrition and compensation of the body's basic needs of minerals, salts and essential elements
- Cases of chronic malnutrition and infections
- Treatment of diarrhea, vomiting and ulcers
- Complications of burns, wounds and surgical procedures.

In order to estimate the volume of demand for intravenous solutions, a field survey was carried out in public, and university hospitals and Royal Medical Services, in addition to some private hospitals. Some suppliers and distributors of pharmaceutical products and medical supplies were also contacted.

Based on the consolidated procurement reports for 2015 and the analysis of information on the consumption of MOH hospitals and university hospitals of nutrients, it was found that the size of demand for IV solutions in these two sectors was 4,483,501 bottles. In comparison to the number of beds in these two sectors of 6,214 beds, approximately 1.98 bottle per bed per day.

As for the size of intravenous fluid consumption in Royal Medical Services hospitals, respondents indicated that bed consumption can be estimated at the same level of the bed consumption rate in MOH hospitals and university hospitals equivalent to 1.98 bottles per bed per day. Accordingly, the size of demand in Royal Medical Services hospitals can be estimated at 1,850,000 bottles annually.



In order to estimate the volume of demand in the private sector, the private sector hospitals of 59 hospitals in the Kingdom were divided into three categories as follows:

- Category 1: Hospitals with 100 beds or more
- Category 2: Hospitals with 50-99 beds
- Category 3: Hospitals with 49 beds and less

Taking into account the results of the field survey of private sector hospitals and the assumptions described above regarding the structure of these hospitals and their distribution according to the number of beds, the size of demand for intravenous solutions for this sector was calculated as shown in the following table:

**Table 9: Size of private hospital demand for intravenous solutions**

The hospital size	Number	Annual Consumption / Hospital*(bottle)	Total (bottle)
First category	14	90,000	1,260,000
Second category	22	20,000	440,000
Third category	23	5,000	115,000
<b>Total</b>			<b>1,815,000</b>

Source: Ministry of Health Annual Report, 2015

\* It was estimated by visiting a sample of hospitals in each category

Based on all of the above, the following table shows the size of demand for intravenous solutions in the Jordanian market:

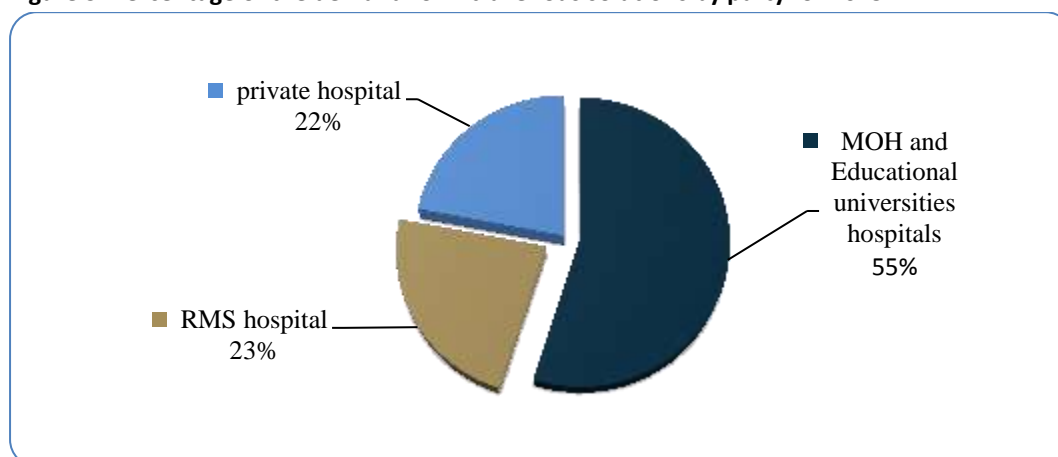
**Table 10: size of demand for intravenous solutions for 2015**

Party	order size for intravenous solutions (bottle)	Number of beds	Average consumption per bed / day (bottle)	Consumption %
MOH and educational universities hospitals	*4,483,501	6,214	1.98	%55
RMS hospitals	**1,850,000	2,551	1.98	%23
Private sectors	**1,815,000	4,350	1.14	%22
<b>Total order size</b>	<b>8,148,501</b>	<b>13,115</b>	<b>1.7</b>	<b>%100</b>

Source: \* Consolidated Purchase Report

\*\* Calculations of the study team

**Figure 3: Percentage of the demand for intravenous solutions by party for 2015**



According to the annual reports issued by the Unified Procurement Department for 2015, the acquisition of 5 types of intravenous solutions was found at the highest consumption rate (81%) of the total value of purchases of public sector hospitals, which can be classified according to their consumption quantities as follows:

- First place: Sodium Chloride IV Solution, which accounted for 65% of the volume of consumption
- Second place: Ringer Lactate Solution, which accounted for 10% of the volume of consumption
- Third place: Dextrose IV Solution, which accounted for 5% of the volume of consumption

The following tables show the quantities purchased the financial values and the final prices of nutrients in the standardized procurement bids and the structural analyzes of the product sizes according to their consumption ratio for 2014 and 2015.

**Table 11: Quantities purchased, financial values and final nutrient prices in the 2015 consolidated procurement bid**

IV solution	Unit price (JD)	Amount (bottle)	%	Price JD
DEXTROSE IV SOLUTION 5% 500 ML BOTTLE	0.075	10,500	%3	60,795
DEXTROSE IV SOLUTION 5% 1000 ML BOTTLE	0.45	105,150	%0.3	10,350
DEXTROSE IV SOLUTION 10% 500 ML BOTTLE	0.5	48,150	%2	41,839
DEXTROSE IV SOLUTION 2 5% 500 ML BOTTLE	2.889	3,250	%0.04	3,400
DEXTROSE IV SOLUTION 50% 500 ML BOTTLE	0.5	15,000	%0.02	4,136
RINGER LACTATE SOLUTION 500 ML BOTTLE	0.49	55,500	%8	170,909
RINGER LACTATE SOLUTION 1000 ML BOTTLE	0.422	1,419,000	%2	59,500

IV solution	Unit price (JD)	Amount (bottle)	%	Price JD
SODIUM CHLORIDE INJ 0.9% 20 ML	0.65	535,000	%0.23	788
SODIUM CHLORIDE IV SOLUTION 0.9% 100 ML BOTTLE	0.485	424,400	%2	47,318
SODIUM CHLORIDE IV SOLUTION 0.9% 250 ML BOTTLE	0.825	50,000	%1	24,075
SODIUM CHLORIDE IV SOLUTION 2.7% 500 ML BOTTLE	0.48	305,900	%0.07	9,415
SODIUM CHLORIDE IV SOLUTION 0.45% 500 ML BOTTLE	0.066	712,000	%0.33	7,500
SODIUM CHLORIDE IV SOLUTION 0.45%+DEXTROSE 5% 500 ML	0.085	80,000	%1	27,195
SODIUM CHLORIDE IV SOLUTION 0.9% 500 ML BOTTLE	0.536	34,100	%32	598,206
SODIUM CHLORIDE IV SOLUTION 0.9% 1000 ML BOTTLE	3.97	5,000	%12	347,750
SODIUM CHLORIDE IV SOLUTION 0.9%+DEXTROSE 5% 500 ML BO	5.03	2,381	%9	205,834
SODIUM CHLORIDE IV SOLUTION 0.9%+DEXTROSE 5% 1000 ML BO	6.435	1,720	%1	41,250
SODIUM CHLORIDE IV SOLUTION 0.18%+DEXTROSE 4.3% 500 ML	0.075	10,500	%7	146,832
WATER FOR INJECTION INJ 5 ML	0.45	105,150	%16	46,992
WATER FOR INJECTION INJ 10 ML	0.5	48,150	%2	6,768
WATER FOR INJECTION INJ 500 ML	2.889	3,250	%1	18,290
AMINO ACIDS 5% 500 ML BOTTLE	0.5	15,000	%0.11	19,850
AMINO ACIDS 10% 500 ML BOTTLE	0.49	55,500	%0.05	11,976
INTRALIPID INFUSION 20% 500 ML BOTTLE	0.422	1,419,000	%0.04	11,068
<b>Total</b>	<b>-</b>	<b>4,483,501</b>	<b>100%</b>	<b>1,922,036</b>

Source: Consolidated Purchasing and Medical Supplies Department, Annual Report 2015

**Table 12: Structure of nutrient products by consumption ratios for 2015**

IV solution (By size)	Average price (JD)	Amount (bottle)	%
500 ml of various types and concentrations	1.97	2,857,701	64%
5 ml of various types and concentrations	0.066	712,000	16%
1000 ml of various types and concentrations	0.75	670,000	15%
100 ml of various types and concentrations	0.45	105,150	2%
10 ml of various types and concentrations	0.085	80,000	2%
250 ml of various types and concentrations	0.5	48,150	1%
20 ml of various types and concentrations	0.075	10,500	0.2%
<b>Total</b>		<b>4,483,501</b>	<b>%100</b>

Source: Calculation of Study Group

**Table 13: Quantities purchased, financial values and final nutrient prices in the 2014 consolidated procurements bid**

IV solution	Unit price (JD)	Amount (bottle)	%	Price JD
DEXTROSE IV SOLUTION 5% 500 ML BOTTLE	0.446	163,650	3%	72,913
DEXTROSE IV SOLUTION 10% 500 ML BOTTLE	0.550	50,900	1%	27,995
DEXTROSE IV SOLUTION 25% 500 ML BOTTLE	1.075	12,800	0.2%	13,765
DEXTROSE IV SOLUTION 50% 500 ML BOTTLE	2.876	650	0.01%	1,839
RINGER LACTATE SOLUTION 500 ML BOTTLE	0.469	582,410	12%	273,267
RINGER LACTATE SOLUTION 1000 ML BOTTLE	0.920	50,000	1%	46,000
SODIUM CHLORIDE INJ 0.9% 20 ML	0.093	20,000	0.4%	1,851
SODIUM CHLORIDE IV SOLUTION 0.9% 100 ML BOTTLE	0.540	46,700	1%	25,218
SODIUM CHLORIDE IV SOLUTION 0.9% 250 ML BOTTLE	0.590	44,500	1%	26,255
SODIUM CHLORIDE IV SOLUTION 2.7% 500 ML BOTTLE	0.970	4,400	0.09%	4,286
SODIUM CHLORIDE IV SOLUTION 0.45% 500 ML BOTTLE	0.480	13,200	0.3%	6,336
SODIUM CHLORIDE IV SOLUTION 0.45%+DEXTROSE 5% 500 ML	0.469	33,400	1%	15,671
SODIUM CHLORIDE IV SOLUTION 0.9% 500 ML BOTTLE	0.423	825,000	17%	348,728
SODIUM CHLORIDE IV SOLUTION 0.9% 1000 ML BOTTLE	0.790	392,000	8%	309,680
SODIUM CHLORIDE IV SOLUTION 0.9%+DEXTROSE 5% 500 ML BO	0.443	314,200	6%	139,057
SODIUM CHLORIDE IV SOLUTION 0.9%+DEXTROSE 5% 1000 ML BO	0.888	50,000	10%	44,400
SODIUM CHLORIDE IV SOLUTION 0.18%+DEXTROSE 4.3% 500 ML	0.445	220,400	5%	98,176
WATER FOR INJECTION INJ 5 ML	0.068	1,530,000	31%	104,040
WATER FOR INJECTION INJ 10 ML	0.117	30,000	1%	3,519
WATER FOR INJECTION INJ 500 ML	0.590	29,600	1%	17,464
AMINO ACIDS 5% 500 ML BOTTLE	4.920	1,778	0.03%	8,748
AMINO ACIDS 10% 500 ML BOTTLE	5.940	3,700	0.07%	21,978
INTRALIPID INFUSION 20% 500 ML BOTTLE	7.980	1,630	0.03%	13,007
<b>Total</b>	-	<b>4,483,501</b>	<b>100%</b>	<b>1,624,193</b>

Source: Consolidated Purchasing and Medical Supplies Department, Annual Report 2014

**Table 14: Structure of nutrient products by consumption ratios for 2014**

IV solution (By size)	Average price (JD)	Amount (bottle)	%
500 ml of various types and concentrations	1.87	2,257,718	46%
5 ml of various types and concentrations	0.068	1,530,000	31%
1000 ml of various types and concentrations	0.86	942,000	19%
100 ml of various types and concentrations	0.59	44,500	1%
10 ml of various types and concentrations	0.54	46,700	1%
250 ml of various types and concentrations	0.117	30,000	1%
20 ml of various types and concentrations	0.093	20,000	0.4%
<b>Total</b>		<b>4,870,918</b>	<b>%100</b>

Source: Calculation of Study Group

### 3.4 Analysis of expected supply

The products of intravenous solutions are available in the local market through the drug stores and medical supplies companies, which in turn import these products to meet the needs of hospitals and medical centers operating in the public and private sectors. According to the market survey, local demand for intravenous products was found to be imported from Arab countries (Saudi Arabia, Egypt, UAE) and / or foreign countries (China, Greece, Germany and Pakistan). The results of the field survey indicated that there was a single local plant For the production of intravenous solutions, the Arab pharmaceutical company owned by Al-Hikma Group, whose annual production capacity was about 3 million units of intravenous solutions containing sodium chloride. However, the field survey showed that the company has stopped its specialized production line of the manufacture of intravenous solutions several years ago.

The results of the survey showed that there are several companies that import and sell intravenous solutions products in the Kingdom, the most important of which are the following:

- Alsabagh Drug Store
- Al Kurdi Drug Store
- Petra Drug Store
- Al Jardaneh warehouse for medicines
- Shakir warehouse
- Alsharq Warehouse
- Hilal Drug Store
- Al Ghroub Drug Store
- Arab Drug Store
- MS Pharma
- Jawda International Company
- Mona Zabin Company

It was also found that these companies import and sell four main types of intravenous solutions for hospitals in all health sectors, which can be mentioned as follows:

- Sodium Chloride 0.9% (Normal Saline)
- Dextrose 5% Sodium Chloride 0.9% (Dextrose Normal Saline)
- Dextrose 4.3% in Sodium Chloride 0.18% (Pediatric Solution)
- Ringer Lactate

However, some other types of intravenous solutions, which are supplied by the aforementioned companies have been mentioned, but in a lower amounts than the previously mentioned items. The most important ones can be mentioned as follows:

- %0.45 Normal Saline
- %2.7 Normal Saline
- %0.18 Normal Saline
- %0.10 Normal Saline
- %0.20 Normal Saline
- %0.45 Dextrose Saline

These companies provide the products of intravenous solutions and offer them to different hospitals in the following main sizes:

- 100 ml
- 250 ml
- 500 ml
- 1000 ml

The following table shows the prices of the sale for intravenous solutions in the local market as demonstrated by the results of the field survey.

**Table 15: Prices for the sale of intravenous solutions in the local market**

Item \ size	Selling price per bottle (JOD)
50 ml	0.8-1.0
250 ml	0.8-1.0
500	0.5-1.0
1,000 ml	0.9-1.5

It has been noted that there is a convergence in the prices of the sale of intravenous solutions by the target sector (public / private sector), where the price factor is the most important factor in the trade-off between suppliers in the case of bids and tenders offered by hospitals of the Ministry of Health. The pricing strategy adopted by the supplier of intravenous solutions and its ability to grant discounts of free quantity / quantities is one of the main reasons why hospitals prefer the products of some suppliers.

Where it was revealed through the field survey, that the most important criteria followed by hospitals / medical centers in the selection of suppliers of intravenous solutions include:

- Product price

- Country of origin for intravenous solutions products
- Adherence to delivery dates and delivery time
- Supplier's ability to provide a diverse mix of intravenous solutions

### **3.6 Marketing Strategy**

#### **Target Market**

The project targets hospitals / medical centers operating in the following sectors:

- Ministry of Health
- Universities
- Royal Medical services
- Private sector

Before talking about strategic marketing elements, it is necessary to identify the main marketing objectives that are desired from the implementation of this strategy, which can be summarized as follows:

- Attract demand for project products.
- Establish a distinctive position for the project products in the market to penetrate and reduce the risks of competition potential.
- Growth of market share of the project compared to domestic competitors.
- Profit for the project in the long run and during its lifetime.

To achieve these objectives, we offer the following recommendations within each marketing strategy element.

#### **Expected services and products**

Emphasis must be placed on the quality of final products as they are a key criterion in the rapid acceptance of hospitals / medical centers for new products, in addition to enabling the project and its products to gain a high profile among current and / or potential competitors. In this area, emphasis must be placed on the characteristics and quality of the product such as:

- Specific percentages of medical concentrations of raw materials used in the manufacture of intravenous solutions
- Sterilization and medical hygiene of products
- Packaging method of products

It is proposed to focus the project's production on intravenous solutions of 500 ml and 1,000 ml, as they constitute the largest proportion of intravenous fluid consumption by hospitals in all health sectors. The consumption of intravenous solutions of 500 ml and 1000 ml was about 64% and 15%, respectively, of total consumption in all health sectors by 2015.

The previous items can be produced in a mixture of different medical concentrations requested by different medical authorities, as well as packaging options that can be used to provide the final product which is in plastic containers and / or glass containers.



### Expected prices

In order to achieve the expected market share of the project and to ensure the delivery of competitive and reasonable prices in the local market, a rapid penetration strategy should be pursued in pricing the products of the project by offering them at lower prices than the rest of the products available in the market and accompanied by intensive promotional efforts in view of the current competition in the Jordanian market As well as high consumer sensitivity to the price paid for intravenous solution products, which will facilitate the project's mission to penetrate the objective and obtain its expected market share.

Accordingly, it is proposed to put the project's products and sell them to the targeted hospitals / medical centers within the following price structure:

- The average selling price for the product of intravenous solutions of 500 ml is (0.50) JD.
- The average selling price for the product of intravenous solutions of 1,000 ml is (1) JD.

### Promotion

The promotion strategy aims at increasing the awareness of the targeted hospitals / medical centers of the project products in order to maximize demand and gain the estimated market share of the project. The following table shows the content of the promotional messages addressed to the target parties and the proposed promotional means in delivering marketing messages to them.

Target	Promotion message	Promotion mean
Hospitals / medical centers	<ul style="list-style-type: none"> <li>▪ Competitive price for project products and promotional incentives that can be provided</li> <li>▪ High quality products</li> <li>▪ Ability to provide products in quantities and time required</li> <li>▪ A diverse mix of intravenous solutions of the required sizes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Personal meetings and direct contact with decision makers</li> <li>▪ Promotional materials</li> <li>▪ Technical and financial presentations and offers</li> <li>▪ Website</li> <li>▪ Means of social communication</li> </ul>

### Selling/ Distribution

The distribution strategy of the project seeks to ensure that the products are in excellent condition for the hospitals / medical centers and to ensure delivery of quantities and items required in accordance with the contracts concluded and compliance with the delivery dates of the orders in order to reduce the total distribution costs and potential risks. Taking into account the nature of the consumer products of the project and the nature of the medical entities to be addressed and targeted, it is advisable to follow the method of direct distribution (the project -the consumer). The most important characteristic of this method is the higher that can be achieved of the project, which will be more than that achieved in the case of following distribution channels through agents, as well as the ability to build good relations with hospitals / medical centers and consolidate them to serve

the marketing parties of the project and improve the level of sales. However, such a method would require the project, if pursued, to invest in vehicles for the transportation of products and to manage the maintenance and operating costs expected from the use of the vehicle fleet.

### 3.7 The Expected Market Share

The following table shows the market share of the project, according to the following assumptions:

- Target all hospitals operating in health sectors in the local market
- The maximum designed capacity of the project is (1.5) million units of intravenous solutions in one operational year by adopting a single working shift system. The production lines of the factory are supposed to operate with two working shifts and 8 working hours for each shift starting from the first operational year. And to start the work and production in the plant with three shifts on the third operational year and subsequent years throughout the project's life cycle, and thus the total production quantities will reach 4.5 million units of intravenous solutions.
- The actual utilizing rate of the designed capacity of the plant.

**Table 16: Actual utilization rate**

	Years									
	1	2	3	4	5	6	7	8	9	01
Actual utilization rate	96%	100%	70%	74%	78%	82%	86%	90%	94%	99%

Note: The actual utilization rate of the plant varies from year to year because of the increase in the number of shifts in some years, while the growth rate on demand was estimated at 5% in all years.

- The main production is concentrated on intravenous solutions (500 ml) and (1,000 ml), where the production capacity of these products is approximately 87% and 13% respectively of the designed capacity over the ten years
- The average selling price for the product of intravenous solutions (500 ml) is JD 0.50 at a growth rate of 3% per year
- The average selling price for the product of intravenous solutions (1,000 ml) is JD 1 with a growth rate of 3% annually
- The number of working hours (8) hours / day
- Working days (350) working days in the operational year
- The proposed project is expected to start in 2020
- The growth rate of demand for intravenous solutions was estimated at 5% annually from 2015 to 2020, with the expected future demand volume as follows:

	2015	2016	2017	2018	2019	2020
Future demand size (bottle)	8,148,501	8,555,926	8,983,722	9,432,908	9,904,553	10,399,781

- Assuming continuity in the trend of future demand growth in the IV market at a growth rate of 4% during the life time of the project.

**Table 7: The project market share**

Statement	Year 1	Year 2	Year 3	Year 4	Year 5
Expected number of customers	210,000	231,000	254,100	279,510	307,461
Number of kiosks	10	10	10	10	10
The area of the restaurants and cafes	1,000	1,000	1,000	1,000	1,000

Statement	Year 1	Year 2	Year 3	Year 4	Year 5
Average per capita expenditure on games/ JD	7	7.2	7.4	7.6	7.9
Rentals of restaurants & Cafes/ JD	150,000	150,000	150,000	150,000	150,000
Kiosk rentals/ JD	20,000	20,000	20,000	20,000	20,000

**Table 18: Market share of the project**

Statement	Years									
	1	2	3	4	5	6	7	8	9	10
Production quantities of IV solution 500 ml	2,500,000	2,625,000	2,756,250	2,894,063	3,038,766	3,190,704	3,350,239	3,517,751	3,693,639	3,878,321
Production quantities of IV solution 1000 ml	375,000	393,750	413,438	434,109	455,815	478,606	502,536	527,663	554,046	581,748
Actual production capacity	2,875,000	3,018,750	3,169,688	3,328,172	3,494,580	3,669,309	3,852,775	4,045,414	4,247,684	4,460,069
Design capacity	3,000,000	3,000,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000
Actual operating rate	%96	%100	%70	%74	%78	%82	%86	%90	%94	%99
Sale price of intravenous solutions (500 ml) (JD)(	0.50	0.52	0.53	0.55	0.56	0.58	0.60	0.61	0.63	0.65
Selling price of intravenous solutions (1,000 ml) (JD)	1.0	1.03	1.06	1.09	1.13	1.16	1.19	1.23	1.27	1.30
Number of working days per year solutions (refill)(	350	350	350	350	350	350	350	350	350	350
Market size of intravenous solutions (refill)(	10,399,78	10,815,77	11,248,40	11,698,33	12,652,92	12,652,92	13,159,04	13,685,40	14,232,81	14,802,13
Market share %	1	2	3	9	4	4	1	2	8	1
	%28	%28	%28	%28	%29	%29	%29	%30	%30	%30

## 4. Technical Study

### 4.1 The Designed Project Capacity

The designed capacity of the project, which is the number of units of intravenous solutions expected to be produced is about (1.5) million units per work shift distributed as shown in the following table.

**Table 19: Designed capacity of the project**

Product	Clarification (unit)
IV solution 500 ml	1,305,000
IV solutions 1000 ml	195,000
Designed capacity / single work shift	1,500,000

In order to reach the estimated designed capacity of the project, it requires the purchase of a land area of 5,000 m<sup>2</sup> and the construction of buildings of about (1000 m<sup>2</sup>) for the production hall and about (700 m<sup>2</sup>) for warehouses and (500 m<sup>2</sup>) for laboratories as shown in the table below.

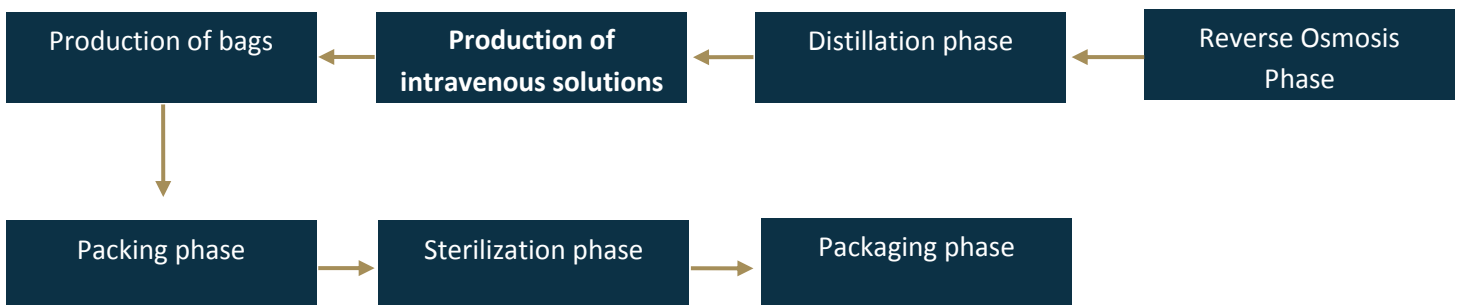
**Table 20: Areas required for the project**

Item	Unit
land m <sup>2</sup>	5,000
Production hall m <sup>2</sup>	1,000
Warehouse m <sup>2</sup>	700
Laboratories, quality control and technical facilities m <sup>2</sup>	500

### 4.2 Production Process

The diagram below shows the production process for intravenous solutions:

**Figure 4: Production plan for intravenous solutions**



The following steps are followed to complete the production process:

### 1. Materials

- Purchasing raw materials and checking their quality
- Receiving the raw materials purchased, registration and storage in warehouses
- Preparation of raw material mixtures and processing for production.

### 2. Production

- Input raw materials on production lines
- Production of intravenous solutions according to the approved specifications
- Examine the quality of the final products and ensure that they conform to the specified standards and specifications
- Sealing the intravenous solutions and sterilization
- Packing and packaging of finished products from intravenous solutions
- Storage of finished products.

## 4.3 The Required Fixed Assets

The following table shows the required fixed assets for the project.

**Table 21: Fixed Assets resources required**

Statement	Unit	Price (JD)	Amount (JD)
Land M <sup>2</sup>	5,000	30	150,000
Building m <sup>2</sup>	1,500	250	375,000
Warehouses m <sup>2</sup>	700	200	140,000
Machinery and fittings	1	1,800,000	1,800,000
Transportation means	3	25,000	75,000
Laboratories	1	50,000	50,000
Information technology	1	15,000	15,000
<b>Total</b>			<b>2,605,000</b>

\*Figures were estimated from the reality of the market study

#### 4.4 The Required Human Resources

The following table shows the human resources required for the project. The number of employees required is about 49 employees with a total salary of JD 260,000 annually.

**Table 22: Human Resources Required For the Project**

Item	Number of Employees	Monthly Salary (JD)	Total Annual Salary (JD)	Operational Salary Annual (JD)	Administrative Salary Annual (JD)
General director	1	2,000	24,000	-	18,000
Financial director	1	1000	12,000	-	9,600
Marketing director	1	1000	12,000	-	9,600
Quality control director	1	1000	12,000	9,600	-
Accountant	1	500	6,000	-	6,000
Marketing	1	400	4,800	-	8,400
Procurement	1	400	4,800	-	4,800
Warehouse manager	3	300	10,800	-	3,600
IT officer	1	600	7,200	-	8,400
Lab technician	3	600	21,600	21,600	-
Production supervisor	3	700	25,200	25,200	-
Maintenance workers	2	500	12,000	12,000	-
	30	300	108,000	108,000	-
<b>Total</b>	<b>49</b>	<b>9,300</b>	<b>260,400</b>	<b>176,400</b>	<b>68,400</b>



The following table shows the general job description of the jobs required in the project.

**Table 23: General Job description of key project posts**

Job	Job Description
General Manager	Planning, organizing, coordinating and controlling matters related to the internal management of the company, and participating in determining the company's policy and managing matters related to the work. Review the reports received by the management department and oversee the analysis process, study the problems that arise and develop solutions to them, and technical and administrative supervision of staff and raise their efficiency, and taking into account the application of occupational safety and health regulations.
Technical director	Develop plans, strategies and general objectives of production activities, quality control, research, product development, maintenance and supervision of its implementation within the means and resources available with the highest degree of efficiency and quality and supervise the operation of the factory and follow-up with the work of all employees and ensure the safety and security of these work and the discovery of problems and work to resolve them in coordination with Departments to ensure that their operations are conducted as required.
Production Supervisor	Develop production plans and prepare operating orders and oversee the implementation of the required specifications and quality and prepare the required production reports on time.
Quality control director	Ensuring the quality of raw materials, packing materials and finished products are a match with required and specified specifications, preparing the required inspection reports on time and supervising calibration of devices.
Financial director	Supervising the implementation of the company's financial policy, cash flow management, preparing the final accounts and the estimated budget, ensuring the proper application of accounting systems and procedures, issuing financial reports and controlling the financial resources and expenses, in addition to preparing the estimated budgets and reconciliations of the bank's accounts with local and foreign banks.
Marketing director	Develop appropriate marketing plans, objectives and strategies and supervise the preparation of plans for internal and external sales and adopt them according to the directions and possibilities of the company and guide the process of marketing studies, which aims to follow the activities of competitors and open new marketing outlets and strengthen relations with customers and take into account their affairs.
Sales	Implement the sales policies and programs for the sales department, implement the approved sales policy, all the work orders and carry out all the tasks requested by the marketing director, sales director and the marketing and sales coordinator within the limits of the marketing and sales department, and submit a weekly report to the marketing and sales manager to show what has been achieved and what has been postponed.

Job	Job Description
Accountant	Proof of accounting restrictions and preparation of monthly statements of accounts sent to each of the customers and suppliers in addition to the audit and reconciliation between the balances of bank accounts in the records with the statements of accounts of these banks.
Procurement	Organizing and maintaining records and forms of procurement management, entering the relevant data and acting on behalf of the Purchasing Manager in case of non-presence, participating in planning, preparing the executive programs of the procurement department, training the personnel working in the Procurement Department on their work and ensuring the ability of suppliers to meet the requirements of purchase orders, In the preparation of the procurement management budget.
Warehouse manager	Supervising the request of the material when the assets of the warehouse arrive at the point of re-application and follow up the preparation of the class cards and the registration of the necessary information on them and continuously update and organize and record and re-receipt of materials borrowed and custody from the warehouse to the employees duly and take responsibility for the assets of the warehouse and take into account the application of the principles of public safety and occupational health Warehouse.
Administrative Officer	Assisting in all aspects of administrative organization and coordination between departments and units working in solving administrative and operational problems daily, scheduling and coordinating meetings, interviews, events and other similar activities in addition to sending and receiving mail and parcels, preparation of correspondence and saving and updating personnel files.

## 4.5 Special Conditions

The following table shows the general and special requirements for the establishment of pharmaceutical factories that must be considered for the development and implementation of the project.

**Table 24: General and special requirements for pharmaceutical plants**

Statement	Conditions
Required documents and procedures	<ul style="list-style-type: none"> <li>▪ A lease contract for the property authenticated by the official authorities or a deed of title</li> <li>▪ A valid organizational site chart</li> <li>▪ Proposed area plan for buildings</li> <li>▪ Company registration certificate</li> <li>▪ Preliminary approval from the organizing committee to allow the use of land or building for industrial purposes</li> <li>▪ The Directorate shall submit the request to the Commission for consideration and verification of the availability and correctness of all required documents</li> <li>▪ The Committee shall disclose the location of the pharmaceutical plant to be licensed.</li> <li>▪ The Committee shall submit its recommendations on the requirements of the license to the Director General within 14 days from the date of the disclosure</li> <li>▪ The General Director shall raise his recommendation regarding the request for authorization to the Minister for appropriate decision, provided that such decision shall be issued within 30 days from the date of disclosure</li> <li>▪ Approval of the establishment of the drug factory is nullified if it is not established within a period not exceeding three years from the date of obtaining the construction license from the competent authority unless a decision is issued by the General Director to extend this period for a similar period on the basis of a justified request from the concerned party.</li> </ul>
Terms of License	<ul style="list-style-type: none"> <li>▪ The building of the pharmaceutical factory requires the following:</li> <li>▪ The site of the drug factory should be located one kilometer from the nearest residential community or source of pollution, such as factories that emit dust, organic fumes, acids, cattle farms, sheep, poultry or landfill, taking into consideration the direction of the wind in the area where the construction is taking place.</li> <li>▪ The distance from the place of establishment of the medicine plant and any source of water, such as the collection of rainwater, groundwater, spring, water or valleys, shall not be less than 500 meters</li> <li>▪ To maintain the integrity of the aquifers, and in the case of underground</li> </ul>

Statement	Conditions
	<p>water such as the well within the site dedicated to the establishment of the drug factory, take the necessary measures to prevent the arrival of any contaminants into the well to avoid pollution of the groundwater and to distance the project not less than one kilometer from the nearest exploited well For drinking purposes</p> <ul style="list-style-type: none"> <li>▪ The building area should be suitable for the type of production lines, their size and the nature of the product</li> </ul>
Items to be provided in the building	<ul style="list-style-type: none"> <li>▪ Warehouses of raw materials, packaging materials, final and semi-final product</li> <li>▪ Production areas in proportion to the nature of the product to be produced and the principles of good pharmaceutical manufacturing including the technical specifications and general conditions of the procedures and processes related to the pharmaceutical manufacturer</li> <li>▪ Quality control laboratories</li> <li>▪ A research and development department or contracting with accredited centers for this purpose</li> <li>▪ The conservation of the environment requires:               <ul style="list-style-type: none"> <li>▪ Continuous water supply</li> <li>▪ Water treatment unit commensurate with the nature of the product</li> <li>▪ A unit for the treatment of industrial wastes and wastes and environmental pollutants in accordance with their nature or contracting with authorized bodies for this purpose</li> <li>▪ Air treatment unit</li> <li>▪ Prepare a system of documentation and work on its application and updating it to suit the productive activities</li> </ul> </li> </ul>
Workers in the pharmaceutical factory	The terms to be met by the workers in the pharmaceutical factory and their technical and administrative responsibilities shall be determined in accordance with instructions issued by the General Director for this purpose
Objection	<p>The applicant has the right to object to any decision issued under the provisions of this Law within a period not exceeding thirty days from the date of notification of the decision</p> <p>يقدم The objection shall be submitted to the Director-General for transmission to the Objections Committee formed by the institution under the provisions of Article 13 of the Law</p>
The manufacturing site	The General Director shall issue his decision to approve the manufacturing site of the production lines of the licensed pharmaceutical factory in accordance with the bases of accreditation of the manufacturing sites issued by the Board
Fee	<ul style="list-style-type: none"> <li>▪ The Foundation collects the following fees:               <ul style="list-style-type: none"> <li>▪ (500)five hundred dinars when applying for the establishment and</li> </ul> </li> </ul>

Statement	Conditions
	licensing of the drug factory <ul style="list-style-type: none"> <li>▪ (4000))four thousand dinars when granting a license to establish a drug factory</li> <li>▪ (1000))thousand dinars when licensing of any addition to the building of the drug factory each time and at the same site</li> </ul>

#### 4.6 The Required Licenses

The following table shows the licenses required from the different bodies for the execution of the project

**Table 25: The licenses required for the project**

Statement	Entity
Registration and Licensing	<ul style="list-style-type: none"> <li>▪ Ministry of Industry and Trade</li> <li>▪ Food Drugs Administration</li> </ul>
construction	<ul style="list-style-type: none"> <li>▪ Municipality concerned.</li> <li>▪ Engineers Association</li> </ul>
operation	<ul style="list-style-type: none"> <li>▪ Food and Drug Administration, Ministry of Health, Ministry of Environment, Income and Sales Tax Department, Social Security Corporation, Municipality</li> </ul>

#### 4.7 Project Timetable

The following table shows the project implementation period of 20 months, as follows:

Phase	First year (months)										Second year (months)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Research and study	■	■	■																	
Approval, registration and Licensing			■	■	■	■	■	■												
Building and preparation							■	■	■	■	■	■	■	■						
Furnishing and Equipping													■	■	■	■				
Employment and Commissioning																	■	■	■	■
<b>Total</b>	<b>20 months</b>																			

## 5. Financial Study

### 5.1 Financial Assumptions

The following table illustrates the financial assumptions of the project.

**Table 26: The Financial Assumptions of the Project**

Item	Assumption
Inflation Rate	3%
Financing Structure	Equity constitutes 75% of the investment and loans constitute 25%
Interest Rate	9%
Working Capital	6 months of annual cost
Pre-Operating Expenses	2% of total investment
Tax Rate	5%
Exemptions	Advantages, incentives and tax exemptions such as income tax, export exemptions, machine and equipment exemptions under the investment laws of industrial cities
Raw material Cost	45% of total revenues
Staff Benefits	25% of salaries
Annual Salaries Increase	5%
Assets Depreciation Rate	4%-20% of the asset value
Maintenance	0.5% of investment
Growth Rate Of Expenses	3%
Electricity Cost	5% of total revenues
Accounts Receivable	Revenues value for 60 days
Inventory	24% of raw material cost

## 5.2 Investment Cost

The project's Investment cost is estimated at JD 3.2 million distributed among fixed assets of JD 2.6 million, working capital and pre-operating expenses of JD 599 thousand. The following table shows the project's Investment cost.

**Table 27: the project's investment cost**

Item	Value (in thousand JD)
Fixed assets	2,605
Pre-operating expenses	64
Working capital	535
<b>Total</b>	<b>3,204</b>

## 5.3 Financing

The project will be financed with the shareholders by 75% which is estimated at about JD 2.4 million, while the other 25% of the project investment cost will be financed through bank loans of about JD 800 thousand.

The following table shows the financing structure for financing the project.

**Table 28: Project financing schedule**

Item	Value (in thousand JD)	%
Equity	2,402.7	75%
Loan	800.9	25%
<b>Total</b>	<b>3,204</b>	<b>100%</b>

## 5.4 Revenues

The following table shows the total revenues of the project, where it is noted that the revenues in the first year amounts to about JD 1.6 million, and increased to reach up to JD 3.3 million in the tenth year, Due to growth and increased the demand on the products

**Table 29: The Expected Revenues**

Statement	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Medium Size 500 ml (bottle)	2,500,000	2,625,000	2,756,250	2,894,063	3,038,766	3,190,704	3,350,239	3,517,751	3,693,639	3,878,321
Large Size 1000 ml (bottle)	375,000	393,750	413,438	434,109	455,815	478,606	502,536	527,663	554,046	581,748
Price 500 ml (bottle)	0.50	0.52	0.53	0.55	0.56	0.58	0.60	0.61	0.63	0.65
Price 1000 ml (bottle)	1.0	1.03	1.06	1.09	1.13	1.16	1.19	1.23	1.27	1.30
<b>Total Revenues – Thousand JD</b>	<b>1,625,000</b>	<b>1,757,438</b>	<b>1,900,669</b>	<b>2,055,573</b>	<b>2,223,102</b>	<b>2,404,285</b>	<b>2,600,234</b>	<b>2,812,154</b>	<b>3,041,344</b>	<b>3,289,214</b>



## 5.5 The Projected Costs

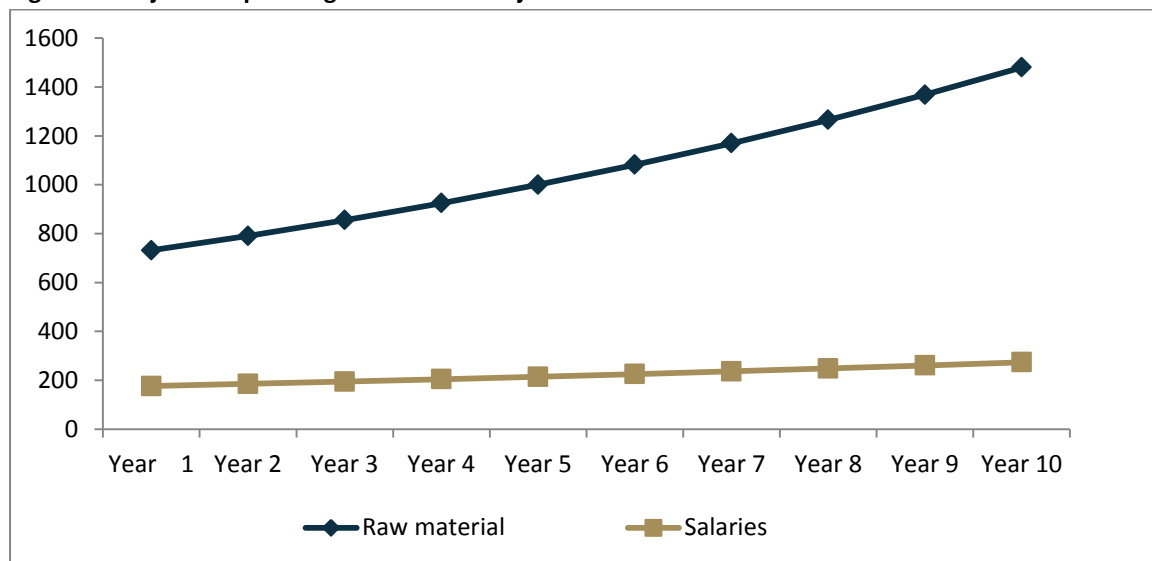
### Operating Costs

The following table shows the project's operating costs according to the previous assumption over tenth years, the raw material cost amount to JD 731 thousand in Year 1 which increases to JD 1.5 million in the year 10, and Salaries cost in Year 1 amounted to JD 176 thousand which increase to reach JD 274 in Year 10.

**Table 30: Operating Costs**

Operating Costs (in thousand JD)										
Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Raw material	731.3	790.8	855.3	925.0	1000.4	1081.9	1170.1	1265.5	1368.6	1480.1
Electricity	81.3	87.9	95.0	102.8	111.2	120.2	130.0	140.6	152.1	164.5
Salaries	176.4	185.2	194.5	204.2	214.4	225.1	236.4	248.2	260.6	273.7
Staff Benefits	44.1	46.3	48.6	51.1	53.6	56.3	59.1	62.1	65.2	68.4
IT Cost	5.0	5.3	5.5	5.8	6.1	6.4	6.7	7.0	7.4	7.8
Depreciation	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6
Maintenance	13.0	13.7	14.4	15.1	15.8	16.6	17.5	18.3	19.2	20.2
Car expenses and distribution	18.0	18.9	19.8	20.8	21.9	23.0	24.1	25.3	26.6	27.9
<b>Total</b>	<b>1297.6</b>	<b>1376.7</b>	<b>1461.8</b>	<b>1553.3</b>	<b>1652.0</b>	<b>1758.1</b>	<b>1872.5</b>	<b>1995.6</b>	<b>2128.3</b>	<b>2271.2</b>

**Figure 5: Projected Operating Costs of the Project**



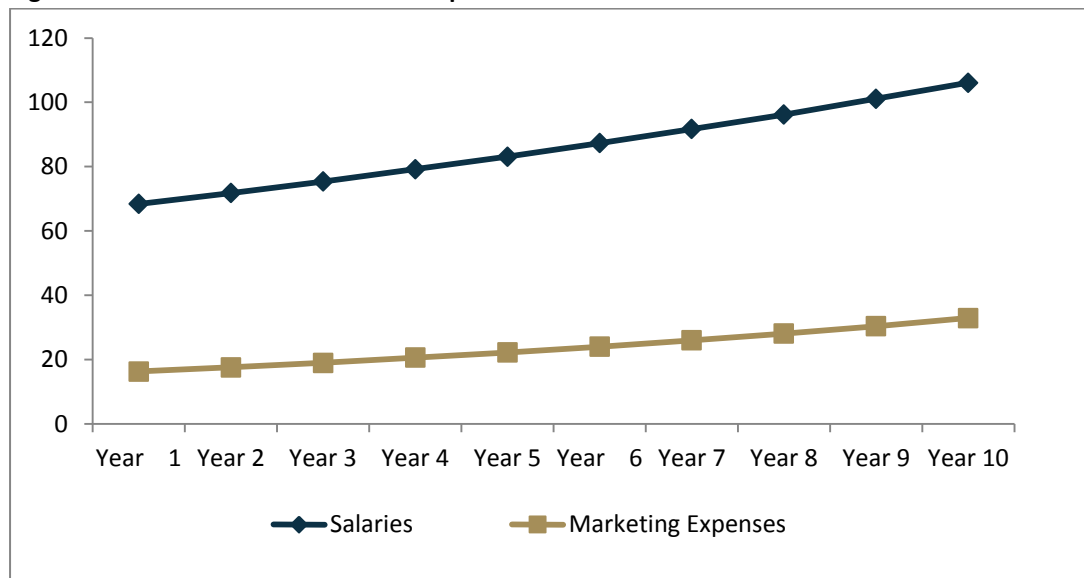
### Administrative Expenses

The following table shows the projected administrative expenses of the project. Employees' salaries reach JD 68 thousand in the first year and increase to JD 106 thousand in the tenth year. The marketing expenses are about JD 16 thousand in the first year and increase to reach JD 33 thousand in the tenth year.

**Table 31: General and Administrative Expenses**

General and Administrative Expenses (in thousand JD)										
Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Salaries	68.4	71.8	75.4	79.2	83.1	87.3	91.7	96.2	101.1	106.1
Staff Benefits	17.1	18.0	18.9	19.8	20.8	21.8	22.9	24.1	25.3	26.5
Stationery	5.0	5.3	5.5	5.8	6.1	6.4	6.7	7.0	7.4	7.8
Professional Fees	3.0	3.2	3.3	3.5	3.6	3.8	4.0	4.2	4.4	4.7
Marketing Expenses	16.3	17.6	19.0	20.6	22.2	24.0	26.0	28.1	30.4	32.9
Other Expenses	5.0	5.3	5.5	5.8	6.1	6.4	6.7	7.0	7.4	7.8
Amortization	64.1									
<b>Total</b>	<b>178.8</b>	<b>121.0</b>	<b>127.6</b>	<b>134.6</b>	<b>142.0</b>	<b>149.8</b>	<b>158.0</b>	<b>166.7</b>	<b>175.9</b>	<b>185.7</b>

**Figure 6: General and Administrative Expenses**



## 5.6 Projected Financial Statements

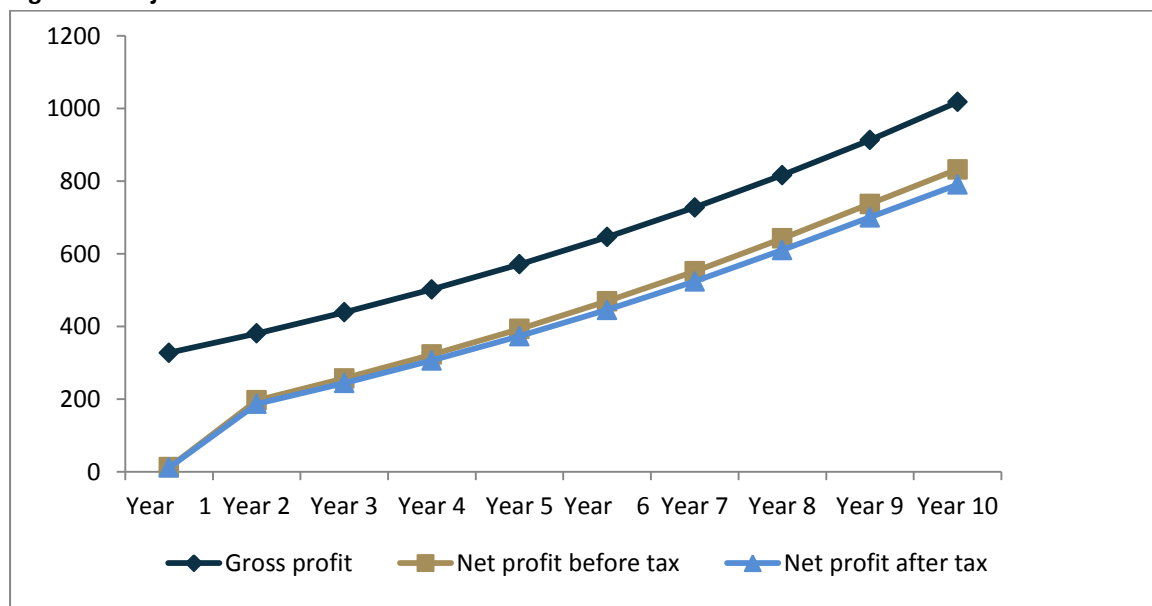
### Income Statement

The following table shows the projected income statement of the project. It indicates that gross profit will increase from JD 327 thousand in the first year to JD 1 million in the tenth year. The net profit before tax will also increase from JD 12 thousand in the first year to JD 832 thousand in the tenth year, and the net profit after tax will increase from JD 11.8 thousand in the first year to JD 791 thousand in the tenth year.

**Table 32: The Projected Income Statement**

Income Statement (in thousand JD)										
Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenues	1,625.0	1,757.4	1,900.7	2,055.6	2,223.1	2,404.3	2,600.2	2,812.2	3,041.3	3,289.2
Operating costs	1,297.6	1,376.7	1,461.8	1,553.3	1,652.0	1,758.1	1,872.5	1,995.6	2,128.3	2,271.2
Gross profit	327.4	380.8	438.9	502.2	571.1	646.1	727.7	816.5	913.1	1,018.1
Administrative expenses	178.8	121.0	127.6	134.6	142.0	149.8	158.0	166.7	175.9	185.7
Net profit	148.6	259.8	311.3	367.6	429.2	496.4	569.7	649.8	737.1	832.4
financial expenses	72.1	63.1	54.1	45.1	36.1	27.1	18.1	7.1	-	-
Amortization	64.1									
Net profit before tax	12.4	196.7	257.2	322.6	393.1	469.3	551.7	642.7	737.1	832.4
Tax	0.6	9.8	12.9	16.1	19.7	23.5	27.6	32.1	36.9	41.6
Net profit after tax	11.8	186.9	244.4	306.4	373.4	445.8	524.1	610.6	700.3	790.7

**Figure 7: Projected Income Statement**



### Projected Balance Sheet

The following table shows the projected balance sheet of the project during the first tenth years. It indicates that total assets will increase from JD 3.2 million in the year of incorporation to about JD 4.3 million in the tenth year. The Total liabilities will decrease from JD 831 thousand in the first year to about JD 227 thousand in the tenth year, and the Shareholders' Equity will increase from JD 2.4 million in the year of incorporation to about JD 4.1 million in the tenth year.

**Table 33: Projected Balance Sheet**

Projected Balance Sheet (in thousand JD)											
Statement	Year of incorporation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Assets</b>											
Cash	470	319	491	684	898	947	1,211	1,503	1,825	2,279	2,765
Receivables		271	293	317	343	371	401	433	469	507	548
Inventory		176	190	205	222	240	260	281	304	328	355
Other	-	33	35	38	41	44	48	52	56	61	66
<b>Total Current Assets</b>	<b>470</b>	<b>798</b>	<b>1,009</b>	<b>1,244</b>	<b>1,504</b>	<b>1,602</b>	<b>1,919</b>	<b>2,269</b>	<b>2,653</b>	<b>3,175</b>	<b>3,735</b>
Fixed Assets	2,669	2,669	2,669	2,669	2,669	2,859	2,859	2,859	2,859	2,859	2,859
Cumulative Depreciation	-	229	457	686	914	1,143	1,372	1,600	1,829	2,057	2,286
Pre- Operating Expenses	64										
<b>Net Fixed Assets</b>	<b>2,733</b>	<b>2,440</b>	<b>2,212</b>	<b>1,983</b>	<b>1,755</b>	<b>1,716</b>	<b>1,487</b>	<b>1,259</b>	<b>1,030</b>	<b>802</b>	<b>573</b>
<b>Total Assets</b>	<b>3,204</b>	<b>3,238</b>	<b>3,221</b>	<b>3,227</b>	<b>3,259</b>	<b>3,318</b>	<b>3,407</b>	<b>3,528</b>	<b>3,684</b>	<b>3,977</b>	<b>4,308</b>
<b>Shareholders Equity and Liabilities</b>											
Accrued Expenses and Payables		130	138	146	155	165	176	187	200	213	227
Long Term Loans	801	701	601	501	401	301	201	101	-	-	-
<b>Total Liabilities</b>		<b>831</b>	<b>739</b>	<b>647</b>	<b>556</b>	<b>466</b>	<b>377</b>	<b>288</b>	<b>200</b>	<b>213</b>	<b>227</b>
Shareholders Contributions	2,403	2,403	2,403	2,403	2,403	2,403	2,403	2,403	2,403	2,403	2,403
Retained Earnings		5	79	177	300	449	627	837	1,081	1,361	1,678
<b>Shareholders' Equity</b>	<b>2,403</b>	<b>2,407</b>	<b>2,482</b>	<b>2,580</b>	<b>2,702</b>	<b>2,852</b>	<b>3,030</b>	<b>3,240</b>	<b>3,484</b>	<b>3,764</b>	<b>4,080</b>
<b>Shareholders Equity and Liabilities</b>	<b>3,204</b>	<b>3,238</b>	<b>3,221</b>	<b>3,227</b>	<b>3,259</b>	<b>3,318</b>	<b>3,407</b>	<b>3,528</b>	<b>3,684</b>	<b>3,977</b>	<b>4,308</b>

### Cash Flow Statement

The following table shows the projected cash flow statement of the project during the first ten years. It indicates that the cash flow from operation will increase from JD 384 thousand in the second year to JD 961 thousand in the tenth year; while the Cash at the ending period will increase from JD 470 thousand in the year of incorporation to JD 2.8 million in the tenth year.

**Table 34: The Expected Cash Flows Statement**

Cash Flow Statement (in thousand JD)											
Statement	Year of incorporation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Operation Activities</b>											
Net Profit	-	12	187	244	306	373	446	524	611	700	791
Depreciation	-	293	229	229	229	229	229	229	229	229	229
Change In Working Capital	-	(349)	(31)	(34)	(36)	(40)	(43)	(46)	(50)	(54)	(59)
Cash Flow From Operation	-	(45)	384	439	499	563	632	706	789	875	961
<b>Investing Activities</b>											
Fixed Assets	(2,733)	-	-	-	-	(190)	-	-	-	-	-
Cash From Investing Activities	(2,733)	-	-	-	-	(190)	-	-	-	-	-
<b>Financing Activities</b>											
Capital (Equity)	2,403	-									
Loan	801	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(101)	-	-
Dividends		(7)	(112)	(147)	(184)	(224)	(268)	(314)	(366)	(420)	(474)
Cash Flow From Financing Activities	3,204	(107)	(212)	(247)	(284)	(324)	(368)	(414)	(467)	(420)	(474)
Net Cash Flow	470	(152)	172	193	215	48	264	292	322	454	486
Cash At The Beginning Period	0	470	319	491	684	898	947	1,211	1,503	1,825	2,279
Cash At The Ending Period	470	319	491	684	898	947	1,211	1,503	1,825	2,279	2,765

## 5.7 Financial, Economic and Social Analysis

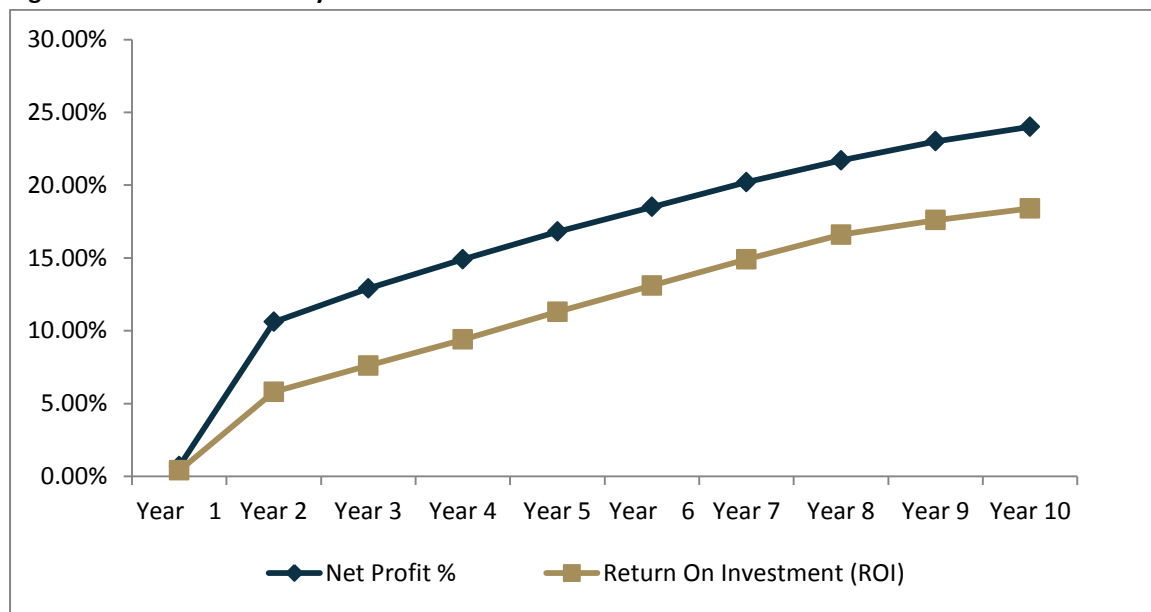
### Financial Analysis

The following table shows the financial analysis of the project. It indicates that the net profit ratio will increase from 0.7% in the first year to 24% in the tenth year, and the return on investment will increase from 0.4% in the first year to 18.2% in the tenth year.

**Table 35: Financial Analysis**

Financial Analysis (In Thousand JD)										
Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Assets	3,238	3,221	3,227	3,259	3,318	3,407	3,528	3,684	3,977	4,308
Revenues	1,625	1,757	1,901	2,056	2,223	2,404	2,600	2,812	3,041	3,289
Profits	12	187	244	306	373	446	524	611	700	791
Capital (Equity)	2,403	2,403	2,403	2,403	2,403	2,403	2,403	2,403	2,403	2,403
Net Profit %	0.7%	10.6%	12.9%	14.9%	16.8%	18.5%	20.2%	21.7%	23.0%	24.0%
Return On Investment (ROI)	0.4%	5.8%	7.6%	9.4%	11.3%	13.1%	14.9%	16.6%	17.6%	18.4%
Return On Capital (ROC)	0.5%	7.8%	10.2%	12.8%	15.5%	18.6%	21.8%	25.4%	29.1%	32.9%
Net Profit On Revenues	0.7%	10.6%	12.9%	14.9%	16.8%	18.5%	20.2%	21.7%	23.0%	24.0%
Assets Turnover (Time)	0.5	0.55	0.59	0.63	0.67	0.71	0.74	0.76	0.77	0.76

**Figure 8: The Financial Analysis**



### Economic Analysis

The following table shows the economic analysis of the project during the first tenth years, we conclude that:

- The Internal rate of return is 18.2%. It exceeded five times the risk free rate, which means the economic feasibility of the project
- The present value of the project reached about JD 3.4 million. It exceeds the investment value with JD 2.4 million, which means the economic feasibility of the project.
- The profitability index of the project reached 1.40 times, which means that the expected value of the project will increase by one time the investment value, which proves that the project is feasible.
- The project payback period is 6.7 years.

**Table 36: the Economic Analysis**

Economic Analysis (in Thousand JD)											
Statement	Year of incorporation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Net cash flow from operating and investing activities	(2,403)	(145)	284	339	399	463	532	606	688	875	961
terminal value											4,080
Net Cash flow	(2,403)	(145)	284	339	399	463	532	606	688	875	5,041
Internal Rate of Return (IRR)	%18.2										
present Value	3,373										
Net present value	971										
Profitability Index (Time)	1.40										
Payback period (Year)	سنة 6.7										

### Social Analysis

The following table shows the social analysis of the project. It is noticed that the number of staff required for the project will increase from 55 employees in the first year to 66 employees in the tenth year. The number of Jordanian employees will increase from 17 employees in the first year to reach 20 employees in the tenth year.

The added value of the project will also increase from JD 390 thousand in the first year to JD 1.3 million in the tenth year. The income tax will also increase from JD 1 thousand to reach JD 42 thousand in the tenth year.

**Table 37: the Social Analysis of the Project**

Social Analysis										
Statement	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Number of Employees	55	56	57	58	60	61	62	63	64	66
Jordanian employees	17	17	17	18	18	18	19	19	19	20
The added value – thousand JD	390	571	636	706	781	863	952	1,048	1,152	1,265
Income tax –thousand JD	1	10	13	16	20	23	28	32	37	42
sales tax value – thousand JD	260	281	304	329	356	385	416	450	487	526
Exports value / imports substitution	325	351	380	411	445	481	520	562	608	658

**Figure 9: The Social Analysis**





## 6. Risk and Sensitivity Analysis

### 6.1 Risk Analysis

The following table shows the risk matrix analysis that may face the project.

**Table 38: Project Risk Matrix**

Risks	Type of Risks	Risk Assessment
<b>Financial Risks</b>	<ul style="list-style-type: none"> <li>▪ <b>Credit Risk</b> Credit risk represents the risk of the company's financial loss as a result of the customer's default of the contractual obligation or that of the party dealing with the company through a financial instrument. These risks are mainly caused by trade receivables and others.</li> <li>▪ <b>Liquidity Risk</b> Liquidity risk is the risk resulting from the company's inability to meet its financial obligations at time. The company's liquidity management is to ensure as much as possible that the company always maintain enough liquidity to meet its obligations as they become due and payable in normal and emergency conditions without incurring unacceptable losses or risks that affect the company's reputation.</li> <li>▪ <b>risk of currency fluctuation</b> Currency risk is the risk of the fluctuation of the value of financial instrument, due to fluctuations in foreign</li> </ul>	<ul style="list-style-type: none"> <li>▪ The financial risks that may face the company are low, because the company payment method is cash</li> <li>▪ There is no risk of currency exchange, because the company sales and purchases by local currency</li> <li>▪ There is no risk of inflation because the company's pricing is based on a periodic basis</li> </ul>

Risks	Type of Risks	Risk Assessment
	<p>currency exchange rates.</p> <ul style="list-style-type: none"> <li>▪ <b>inflation risk</b> It is the risk associated with the possibility that the inflation or the rise in the cost of living might lead to the decrease the real value of the investment.</li> </ul>	
<p><b>Business risk (sector risk)</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Strategic Risk</b> It is the risk resulting from taking bad decisions by the company's management, or implementing the decisions in a wrong way, or not taking the decisions at the right time; which leads to losses or causes loss of alternative opportunities.</li> <li>▪ <b>Legal and Regulatory Risks</b> These risks are reflected as a result of non-compliance with laws, guidelines and instructions governing the work. Legal risks are caused by the company's break of the laws governing the work in the state in which the company operates. While regulatory risks arise from the company's violation of laws and standards issued by the regulatory authorities.</li> <li>▪ <b>Reputation Risk</b> Reputation risk arises from influential negative public views which result in great losses of customers or money. It includes the actions of the company's management or its employees which project a</li> </ul>	<ul style="list-style-type: none"> <li>▪ The risks are considered moderate before the company's establishment, because of getting the approval of the official authorities such as municipality and health</li> <li>▪ Reputational risk is very high, as the company deals with very sensitive issues such as intravenous solutions</li> <li>▪ Market risk in the short term will be low because of the low competition from other companies in the governorate</li> </ul>

Risks	Type of Risks	Risk Assessment
	<p>negative image of the company, its performance and its relationships with customers and other stakeholders. Reputation risk also results from circulating rumors about the company and its activities.</p> <p>▪ <b>Competition Risk</b> Competition risk results from domestic and external competitors and reduces sales and profits.</p>	
<p><b>Operational Risk</b></p>	<p>Operational risk involves losses resulting from the failure of internal operations, human resources and systems. It includes:</p> <p>▪ <b>IT Risks</b> They are losses arising from downtime or systems failure due to the infrastructure, information technology, or the lack of systems, and any failure or malfunction in the systems. They include: the crash of computer systems, breakdowns in communication systems, programming errors, computer viruses and opportunities losses due to breakdown.</p> <p>▪ <b>Human Resources Risk</b> Losses caused by employees or related to them (intentionally or unintentionally). It also includes acts that are intended as methods of</p>	<p>▪ Operational risks are very low, for the company will contract with specialized technical bodies to develop the required information systems, in order to manage operations</p> <p>▪ Competitive salaries will be paid</p> <p>▪ Information security plan will be put in place to safely keep the company information</p>

Risks	Type of Risks	Risk Assessment
	cheating, abusing property or circumvent the law, regulations or company policy by officials or employees, as well as losses arising from the relationship with the customer, shareholders, regulators and any third party.	
<b>State Risk</b>	State Risk includes politicians' interference, civil unrest, wars, financial and monetary policies and high level of debts.	<ul style="list-style-type: none"> <li>▪ State Risk is considered to be low, due to security and political stability; international reports indicate that State Risk is low both in medium and long terms</li> </ul>

## 6.2 Sensitivity Analysis

### First: Increase of Investment Cost By 10%

The following table shows the results of the sensitivity analysis when investment cost increases by 10%.

**Table 39: Investment Increase by 10%**

Index	Base	Impact	Change
Internal Rate of Return (IRR)	18.2%	16.6%	1.6%
The Present Value at a discount rate of 13% (in Thousand JD)	3373.5	3368.9	4.5
Net Present Value at a discount rate of 13% (in Thousand JD)	970.8	720.6	250.2
Profitability Index (Time)	1.4	1.3	13.2%
Payback period (Year)	6.7	7.4	-70.0%
The Net Profit Ratio – an average of 10 years	16.3%	16.0%	0.3%
Return on Investment - an average of 10 years	11.5%	10.5%	1.0%
Return on Capital – an average of 10 years	17.5%	15.6%	1.9%
Net Profit On Revenues - an average of 10 years	16.3%	16.0%	0.3%
Assets Turnover (Time) – an average of 10 years	0.7	0.6	4.9%
The added value - an average of 10 years (in thousand JD)	836.6	835.6	95.8%
income tax - an average of 10 (in thousand JD)	22.1	21.7	35.2%
sales tax - an average of 10 years (in thousand JD)	379.3	379.3	0.0%

The above analysis refers to the feasibility of investment in the project, in light of the high cost of the total investment of the project, which increased by 10%. It is noted that:

- The internal rate of return reaches 16.6%, which is considered high for investment purposes
- The new payback period is 7.4 years, and it is reasonable for recovery purposes
- The return on capital is 15.6%, which is suitable for investment purposes

### Second: Reducing Revenues by 10%

The following table shows the results of the sensitivity analysis when reducing revenues by 10%.

**Table 40: Reducing Revenues 10%**

Index	Base	Impact	Change
Internal Rate of Return (IRR)	18.2%	10.9%	7.3%
The Present Value at a discount rate of 13% (in Thousand JD)	3373.5	2033.2	1340.2
Net Present Value at a discount rate of 13% (in Thousand JD)	970.8	-369.4	1340.2
Profitability Index (Time)	1.4	0.8	55.8%
Payback period (Year)	6.7	9.4	-270.0%
The Net Profit Ratio – an average of 10 years	16.3%	7.7%	8.6%
Return on Investment - an average of 10 years	11.5%	6.3%	5.2%
Return on Capital – an average of 10 years	17.5%	8.2%	9.3%
Net Profit On Revenues - an average of 10 years	16.3%	7.7%	8.6%
Assets Turnover (Time) – an average of 10 years	0.7	0.7	-2.3%
The added value - an average of 10 years (in thousand JD)	836.6	613.6	22298.3%
income tax - an average of 10 (in thousand JD)	22.1	10.3	1173.6%
sales tax - an average of 10 years (in thousand JD)	379.3	341.4	3793.4%

The above analysis shows the low sensitivity of the project in case of reducing the revenues or demand by 10%. It indicates that:

- The internal rate of return is 10.9%, which is considered high for investment purposes
- The new payback period is 9.4 years, and it is reasonable for recovery purposes
- The return on capital reaches 8.2%, which is suitable for investment purposes

### Third: Increasing the Operating Costs by 10%

The following table shows the results of the sensitivity analysis when increasing the operating costs by 10%.

**Table 41: Increasing the Operating Costs by 10%**

Index	Base	Impact	Change
Internal Rate of Return (IRR)	18.2%	12.7%	5.4%
The Present Value at a discount rate of 13% (in Thousand JD)	3373.5	2353.7	1019.8
Net Present Value at a discount rate of 13% (in Thousand JD)	970.8	-49.0	1019.8
Profitability Index (Time)	1.4	1.0	42.4%
Payback period (Year)	6.7	8.7	-200.0%
The Net Profit Ratio – an average of 10 years	16.3%	9.3%	7.0%
Return on Investment - an average of 10 years	11.5%	7.7%	3.7%
Return on Capital – an average of 10 years	17.5%	10.6%	6.9%
Net Profit On Revenues - an average of 10 years	16.3%	9.3%	7.0%
Assets Turnover (Time) – an average of 10 years	0.7	0.7	-6.8%
The added value - an average of 10 years (in thousand JD)	836.6	671.6	16498.7%
income tax - an average of 10 (in thousand JD)	22.1	13.4	868.4%
sales tax - an average of 10 years (in thousand JD)	379.3	379.3	0.0%

The above analysis shows the feasibility of the project in light of increasing the operating costs of the project by 10%. It indicates that:

- The internal rate of return is 12.7%, which is considered high for investment purposes
- The new payback period is 8.7 years, and it is reasonable for recovery purposes
- The return on capital is 10.6%, which is suitable for investment purposes