Cost-Benefit Analysis of Kirkuk Sulymaniya Railway Project

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Abstract

The railway network is considered one of the major stone in the economic skeleton in most countries. Herein, the user benefit was investigated when a new railway track is to be installed between Kirkuk and Sulymaniya cities in the north of Iraq. The operating costs of the new railway line are compared with the existing transportation modes that depend only on multilane highway between the two cities. The analysis was done using the related parameters that involved in the cost benefit procedures, beside that this project have the ability of joining Iran with Iraq and consequently joining the Iraqi railways. The results show that when the construction and other initial costs are added the economic evaluation is negative and results no user benefit, while in the real world there are impacts on the development of the society when such transportation projects are installed. This paper concluded that there is a great user benefit in the proposed project when the operating, accidents, time saving costs and the ecological effects are considered, with the excluding of the initial costs as in the case of the roadway construction. This study aims to understanding the effect of adding a new mode of travel (railway travel) and compare its effect with the existing modes (roadway travel) by using the cost-benefit analysis.

Keywords : cost-benefit analysis, railway engineering, economic evaluation, operating cost

تحليل الكلفة-المنفعة لمشروع سكة حديد كركوك السليمانية

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الملخص

تعتبر شبكات سكك من أهم البنى التحتية لأي إقتصاد وطني لمعظم دول العالم. في هذا البحث تم تحليل المنفعة المتحققة بالمقارنة مع الكلف عند تنفيذ خط للسكك الحديد بين مدينتي كركوك و السليمانية في شمال العراق. تم مقارنة كلف تشغيل خط سكة الحديد المقترح مع أنماط النقل الموجودة فعليا و التي تعتمد فقط على طريق متعدد المسارات بين المدينتين. أجري التحليل وفق خطوات و تعليمات تحليل الجدوى الإقتصادية للمشاريع. بينت النتائج إنه عندما يتم إضافة كلف الإنشاء و الكلف الأولية الأخرى المتعلقة بتنفيذ المشروع فإن المشروع يظهر غير مجدي إقتصاديا وبينما في واقع الحال هناك تأثيرات مهمة ستكون للمشروع على تطور المجتمع إقتصاديا و إجتماعيا عندما يتم إنشاء مشاريع مماثلة للنقل فضلا عن إنه يمكن توظيفه لربط العراق بإيران و بالتالي الارتباط بباقي شبكة السكك العراقية. تم الإستنتاج بأن هناك منفعة كبيرة للمشروع المقترح عندما يتم الأخذ بالإعتبار كلف التشغيل, الحوادث, التوفير في الوقت, و العوامل البيئية, مع إستبعاد الكلفة الأولية بإعتبار إن خطوط السكك تمثل بنية تحتية و خدمة عامة أسوة بالطريق. تهدف هذه الدراسة الى فهم تأثيرات إضافة نمط جديد (سكة الحديد) مع وجود الأنماط الأخرى (طرق النقل البرية) بإستخدام تحليل الكلفة - المنفعة.

1. Introduction

The uncompleted project of Kirkuk Sulymaniya Railway in the north of Iraq have a dominate effect on the transportation of passengers and freights in the area. **Figure (1)** shows the location of the two cities in north of Iraq. Mainly all the transportation projects in Iraq are sponsored by the government which means that all the fares are generally low compared with the private sector road modes of transit transportation services.

The purpose of this work is the analysis of cost benefit values of the proposed Kirkuk Sulymaniya Railway line by making an economic evaluation of the track, considering all the related parameters that make impacts on the financial decision of the project.

There are strong relationships and social and economic interactions between the Kirkuk city and Sulymaniya city, which mean that there is a high expected level of traffic between the two cities, that may utilized the line as sufficient for completion to increase the number of trips and goods movement. The extending the access of the direct railway line to a distance city like Sulymaniya will opens a variety of opportunities in that city. There are also potential economic advantages of joining the residence in the adjacent areas inside Iran with the other parts of Iraq through this track, which increase the movement in the border with Iran near Sulymaniya city to catch the proposed train line**.** [1]

The expansion of trades and markets in the whole area requires the needs of the proposed line to improve the economic and investment life in the two cities by adding a huge multiservice and multitask new traffic line. Adding this source of transportation facility may give a significant benefit to the national and regional development that could follow the completion of the track.

Also adding this new mode have a great benefit in decreasing the demand of private cars and taxis and other land travel vehicles like buses and heavy vehicles, and also as a consequent will decrease their harm effect on environment**.** [2]

The most applicable essential and sustainable way of transport the passengers and goods in Iraq is the railways, since the railway tracks have the ability to carry the passengers and goods for a long time with low cost compared with other modes of transportation. [1]

2. Iraqi Republic Railways Company (IRR)

The Iraqi Republic Railway Company **(IRR)** have over 1,900 kilometres of standard gauge track and runs from Basra at the south to Rabiya in the north through Baghdad, Bayji and Mosul. **Figure (2)** shows the Iraqi railway network. [3]

There is also a branch line which runs from Shouaiba Junction (close to Basra) to the ports of Khor Az Zubair and Umm Qasr as well as westward from Baghdad through Ramadi and Haqlaniya to Al Qaim and Husayba. Finally, there is a branch line running from Al Qaim to Akashat and from Haqlaniya through Bayji to Kirkuk.

Figure (1): The location of Kirkuk and Sulymaniya cities at the north of Iraq.

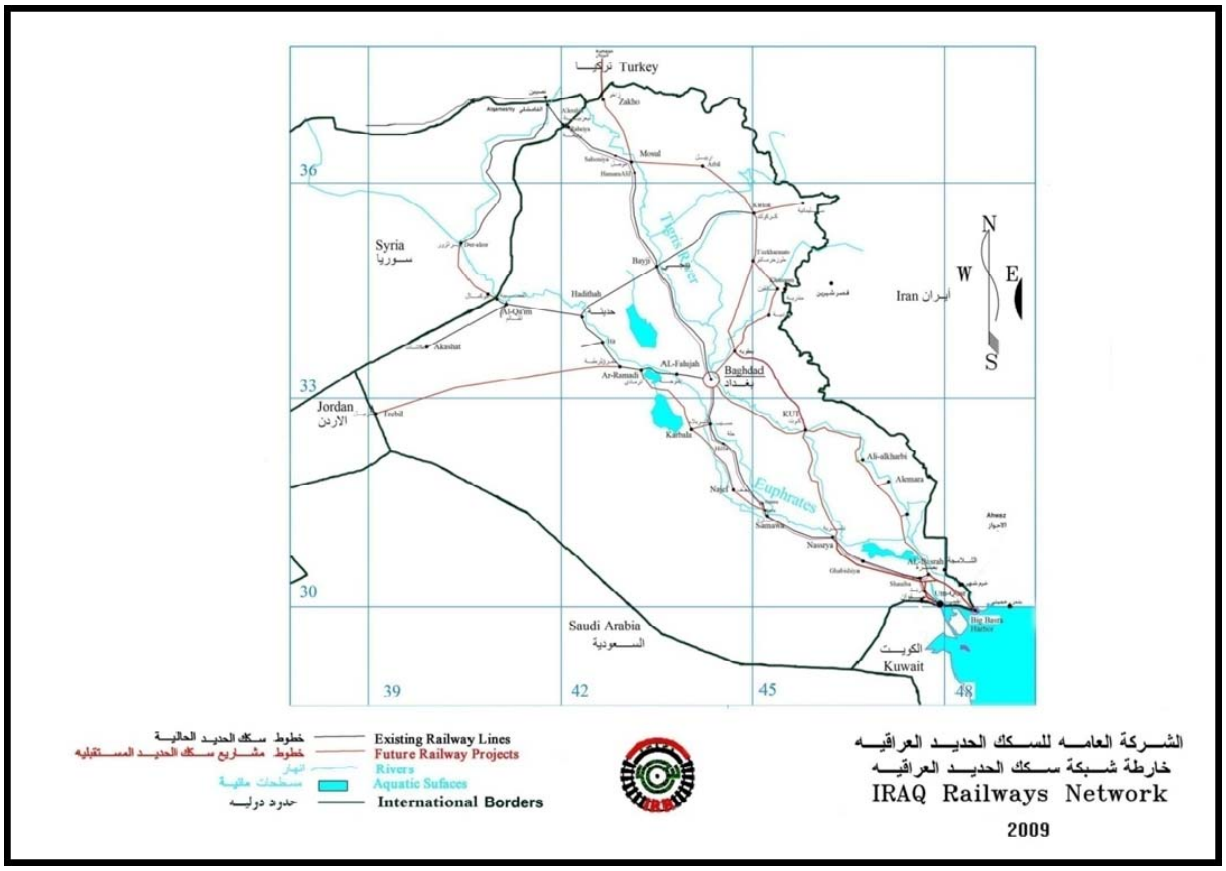

Figure (2): Iraqi Railway Network [3]

The railway started its life back in 1914 in what was then Mesopotamia (a province of the Ottoman Empire) when some 123 kilometers of the Baghdad Railway opened. Construction had begun heading north from Baghdad to join up with a section of railway being built across Turkey

and Syria. After 1916 however the British Military brought narrow gauge equipment across from India to southern Mesopotamia to support their action against the Turks and subsequently were victorious and became the administrators of a League of Nations mandate for the area. Later, in 1920, the railways were transferred to British administration as Mesopotamian Railways.

Following independence from Britain in 1932, Iraq purchased Mesopotamian Railways in 1936 and the company was renamed the Iraqi State Railways. Work then began to extend the railway and in 1941 PC class 4-6-2 locomotives were introduced on the Baghdad to Istanbul Taurus Express running between Baghdad and Tel Kotchek. At this time the British government also supplemented the fleet with HG class 4-8-0 locomotives from India and USATC S118 class 2-8-2 locomotives from the USA, as well as with LMS class 8F 2-8-0 and USATC S100 class 0-6-0T locomotives.

Other major developments included the introduction of Hudswell Clarke 2-8-4T locomotives from 1951, following the opening of a branch line at Kirkuk by the Iraq Petroleum Company in 1947 and a new meter gauge line between Kirkuk and Erbil in 1949. The east and west banks of the River Tigris were also finally connect in 1950 with the opening of a road and rail bridge. New steam locomotives were also added at this time including 2-8-2 locomotives from Maschinen fabrik Esslingen and the Vulcan Foundry and 2-8-0 locomotives from Krupp.

The next major event occurred following the overthrow of the Hashemite monarchy in 1958 and the declaration of Iraq as a republic. The railway was again renamed at this point and became the Iraqi Republic Railways (IRR). At this time, it also began replacing its steam locomotives with a fleet of diesels, although this replacement program took much longer than originally intended and ran from 1961 to 1983.

In recent years, the railways have suffered extensive damage as a result of both conflict and looting and the process of rebuilding is likely to continue for many years. These damages make logistic and financial problems that keep the low level of effectiveness of the Iraqi railways in the national transportation network.

The railway transports in Iraq have a good opportunity in the Arabian Golf going transport. This opportunity will increase if the Iraq big marine port is constructed at the Gulf, which results in a major leap of development in the field of passenger transportation and freight carrying between Asia and Europe.

3. The Proposed Track

The track is a mixed track that carries passenger locomotive and freight wagons. The existing transportation situation between the two cities is not efficient to fulfill the needs of transportation, because it consists of a four-lane two-direction roadway that carried passengers and goods.

The proposed line is now in the designing stage, the length of the track is 118 km double track, the estimated cost is 1855 million $. The design speed is 200 km/hr for passenger locomotives and 140 km/hr for freight wagons. The design axial load is 25 tons. The transport capacity is 1.5 million passengers per year and 6 million tons for freights per year. **Figure (3)** shows the proposed railway line.

Figure (3): The Proposed Railway Track. [3]

4. Economic Evaluation of the Proposed Track

The economic evaluation should be a multilevel and multi objective complex study that involves the social, economy, environment and other related aspects.

Economic evaluation is an essential feature common to all the activities related with the construction of the track. Also the economic effects of adding a new mode of travel involves the transport network users and non users. Its objectives are: [4]

- To increase the competitiveness of railway transportation with the other mode of travel to reach the ultimate convinces of the transportation network users.
- To provide decision-makers like the local government with a fair estimate of the effects of adding the railway line.

Economic evaluation should not be only the accounter's view of the railway system. It should take into account, its qualitative aspects and the potential for developments, like the long-term benefits of railway refunds.

As indicated in the European transportation policy, "**a modern transportation system must be sustainable from both an economic, social and environmental point of view**", this basically sums up the concerns of the transportation agencies as a whole, and of its economic evaluation unit in particular.

The majority of economic evaluation studies for transportation projects are undertaken using the direct user impacts of individual projects in terms of travel costs and outcomes, and compare sums of quantifiable, discounted benefits and costs. Inputs to benefit-cost analyses can typically be obtained from readily available data sources or model outputs (such as construction and maintenance costs, and before and after estimates of travel demand, by trips, along with associated travel times). Valuation of changes in external, somewhat intangible costs of travel (e.g., air pollution and crash injury) can usually be accommodated as obtained from international suggested values, based on recent empirical studies. **[5]**

4.1. Principal Types of Cost Benefit Analysis (CBA)

Cost-Benefit Analysis (CBA) estimates and totals up the equivalent money value of the benefits and costs to the community of projects to establish whether they are worthwhile. These projects may be engineering projects or can be training programs or other projects like health care systems. [6]

One of the problems of CBA is that the computation of many components of benefits and costs is intuitively obvious but that there are others for which intuition fails to suggest methods of measurement. Therefore some basic principles are needed as a guide.

There are many methods of conducting CBA, the most common used is summarized as follows: [7]

4.1.1. Net present value (NPV)

The NPV method is conducting by calculating the present value of the future cash inflow and then calculating the present value of the cash outflow owing to investment, and then the difference between the outflow and inflow is made at zero time point.

If NPV >0, the project is economically viable and if NPV<0 the investment is not worthwhile.

$$NPV = B\left(\frac{(1+i)^n-1}{i(1+i)^n}\right) - C_1 - C_2\left(\frac{(1+i)^n-1}{i(1+i)^n}\right) \quad (1)$$

where

B = annual benefit

C_1 = construction and other initial costs

C_2 =operating and other periodic costs per year

i = minimum attractive rate of return

n= period of project analysis

If the benefits and costs are irregular over the whole time of the project, the general equation may be written as follows: [7]

$$NPV = \sum_{k=0}^{n} B_k\left(\frac{1}{(1+i)^k}\right) - \sum_{k=0}^{n} C_k\left(\frac{1}{(1+i)^k}\right) \quad (2)$$

The advantage of NPV method is as follows:

- It takes into consideration the time value of money as it is based on the principle that the sum of money today has a higher value than an equivalent amount after a year from now.

The NPV of various projects measured as they are in today's rupees can be added. This property ensures that a project having NPV<0 will not be accepted just because it is combined with a project having NPV>0

And the disadvantage of NPV method is as follows:

- It requires data on discount rate
- It is not an easy method to understand ad computation of NPV is also difficult.

4.1.2. Benefit –Cost Ratio (B/C)

This method is an improved version of the NPV method and all benefits and costs are to be expressed in discounted present values at zero time point. Projects with the (B/C) > 1 (positive *net* benefits) will have greater benefits than costs. The higher the (B/C) leads to greater benefits relative to costs. [8]

$$\frac{B}{C} = \frac{\sum_{k=0}^{n} B_k \left(\frac{1}{(1+i)^k}\right)}{\sum_{k=0}^{n} C_k \left(\frac{1}{(1+i)^k}\right)} \qquad (3)$$

The advantage of (B/C) method is as follows:

- When the initial money available to spend in the current period is limited, the BCR criterion may rank projects correctly in the order of decreasing efficient use of capital.
- Under unconstrained conditions, the BCR will accept or reject a project as per the NPV criterion.

And the disadvantage of (B/C) method is as follows:

- It does not provide means aggregating several smaller projects into a package that can be compared with a large project.
- When cash outflow occurs beyond the current period, the BCR criterion is not suitable for selecting a project.

4.1.3. Internal Rate of Return(IRR)

The internal rate of return on a project is the "**annualized effective compounded return rate**" or "rate of return" that makes the net present value (NPV) of all cash flows (both positive and negative) from the particular project equal to zero.

The IRR of an investment is the discount rate at which the net present value of costs (negative cash flows) of the investment equals the net present value of the benefits (positive cash flows) of the investment.

$$NPV = 0 = \sum_{k=0}^{n} B_k \left(\frac{1}{(1+r)^k}\right) - \sum_{k=0}^{n} C_k \left(\frac{1}{(1+r)^k}\right) \qquad (4)$$

where

r = IRR

k = period step of the project (from *0* to n)

The advantage of IRR method is as follows:

- It ranks the projects according to their NPV/IRR . A project with higher IRR is selected from among several projects.
- It considers the cash flow stream in its entity.

And the disadvantage of IRR method is as follows:

- The IRR value cannot distinguish between lending and borrowing and therefore, a high IRR need not necessarily be a desirable yardstick for selecting a project.
- It may not be rigidly defined. [9]

5. User Benefit Evaluation Task

The evaluation tasks may carried out as follows:

Setting up an easy methodology: economic evaluation tools, statistical methods, reporting formats.

Evaluation tasks: by setting the costs and benefits of the project. This process starts simultaneously with the first drafting of the design.

Descriptive tasks: setting the readable economic models to be able to predict long-term effects, and to be able to perform ex-post evaluation.

The proposed railway transportation project is somehow a non-profit project, Compared with the general profitability of the projects, it has the following characteristics: [10]

1) High investment costs and long duration

2) Government-guided

3)Noncompetitive

4)Incorporeal benefit

Due to these characteristics, the economic evaluation of benefits about this kind of project is mainly about national economic evaluation. For common profitable projects, both benefits and costs are targeted at investors. For this transportation projects, costs are aimed at the government and benefits belong to every people. [11]

The costs for the proposed railway line are made up by the following components:

- Construction costs (tracks, stations, complex signal and signal equipment system)
- Land acquisition cost and removing conflict structures costs
- Equipment costs and control units.
- Operating costs
- Social costs

The benefits of the railway transport projects include financial benefits and national economic benefits and non-profit projects only have national economic benefits, including: [11]

- Reduce vehicles operating costs
- Passengers and cargo time saving
- Reduce the rate of traffic accidents
- Reduce noise pollution
- Reduce air pollution.

Figure (4) shows the input parameters of making user benefit analysis.

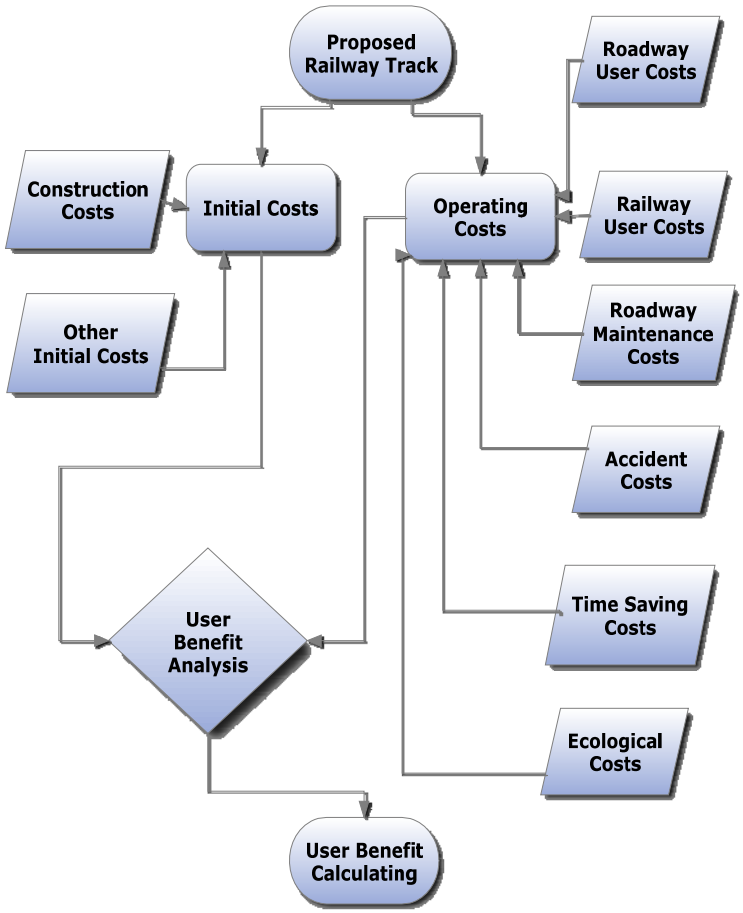

Figure (4): The Input Parameters of Making User Benefit Analysis.

6. Data Collection For Economic Evaluation

To collect the data of the railway economy, the following principles are to be carried to be able to produce readable, usable economic evaluation models, and for providing a necessary condition for performing useful assessment for the present day and the future. [12]

6.1. Macroscopic principle

From macroscopic respects, division principle should follow those points:

(1) Passenger trains and freight trains should be financially separated.

(2) Bring about an advance in economy and help to improve the competitiveness of railway market.

(3) Promoting social harmonious development, all division schedules should develop the harmonious railway. Focus on the impact on environment along the lines.

(4) Favorable to the use of every lines' capacity in the railway corridor.

(5) Should be cooperate with tie line, disconnect line and terminal, etc., creating good driving and organizing condition for train operation.

6.2. Microcosmic principle

From microcosmic respects, division principle should follow those points:

(1) Be convenient for passengers, improve the service quality, and reduce the number of times of passengers transferring.

(2) Improve the traveling speed of train within the railway corridor effectively.

(3) Fully consider the mutual coordination between the speed goal of every circuit and grade of speed of the train in the corridor.

(4) Be good for the daily train-running and adjusting, and create the good condition for operation and organization.

(5) As high grade speed passenger train, and longer passenger train inside transport corridor, should make it run on passenger special line as long as possible, or operate longer distance on passenger special line as much as possible.

7. Cost Benefit Analysis of the Kirkuk Sulymaniya Railway Project

7.1. Reduce vehicles operating costs models

When the railway line project is complete, many trip makers will change their mode of travel from cars and buses to trains. The freight movement may also been changed to the freight wagons. That will result in changing the expenditures of using trains instead of cars and buses or using heavy vehicles. [13]

7.2. The Cost of Vehicle Transport

Vehicle Costs include direct user expenses to own and operate private vehicles. These costs could be divided into Fixed Costs (Vehicle purchase or lease, Insurance , Registration and vehicle taxes) and Variable Costs (Maintenance and repair , Fuel, fuel taxes and oil), Private cars are usually depreciated over a 10 year period, buses over 20 years.

\The traffic data was calculated from the study areas and showed in **Table (1).**

The cost of operating vehicles before adding the new railway line (B_{1V}) may be computed as follows:

$$B_{1V} = C_V \times T \times V_V \times 365 \quad (5)$$

where

B_{1V} = The cost of operating vehicles before adding the new railway line.

C_V = Operating cost of vehicles per hour (passenger, busses, and heavy vehicles).

T = Travel Time of single vehicles per hour (passenger, busses, and heavy vehicles).

V_V = The traffic volume of vehicles per day (passenger, busses, and heavy vehicles). [14]

The results of Equation **(5)** are shown in **Table (2**).

Table (1): The Collected data that Concerns the Existing traffic between Kirkuk and Sulymaniya cities (from data collection on study area):

Traffic volume at peak hour	**1100 vehicle per hour**
The percentage of buses	**10%**
The percentage of heavy vehicles	**15%**
Operating cost of passenger car[15]	**15$ per hour**
Operating cost of buses[15]	**20$ per hour**
Operating cost of heavy vehicle[15]	**40$ per hour**
Length of the travel line	**118 km**
Medium speed of passenger cars	**90 km/hr**
Travel Time of passenger cars	**1.3 hr**
Medium speed of buses	**60 km/hr**
Travel Time of buses	**1.97 hr**
Medium speed of heavy vehicles	**55 km/hr**
Travel Time of heavy vehicles	**2.15 hr**
K value (the ratio of peak flow per hour to the flow per day)[16]	**0.17**
The traffic volume of passenger cars per hour	**75% *1100 =825 vehicle per hour**
The traffic volume of passenger cars per day	**825/0.17= 4853 vehicle per day**
The traffic volume of buses per hour	**10% *1100 =110 vehicle per hour**
The traffic volume of buses per day	**110/0.17= 647 vehicle per day**
The traffic volume of heavy vehicles per hour	**15% *1100 =165 vehicle per hour**
The traffic volume of heavy vehicles per day	**165/0.17= 970 vehicle per day**

Table (2): The application of Equation (5)

Vehicle type	C_V	T	V_V	365	Operating cost
passenger	15	1.3	4853	365	34541228
busses	20	1.97	647	365	9304507
heavy	40	2.15	970	365	30448300
Total operating cost * 10^6 $ per year (B_{1V})					74.294035

7.3. The Cost of Train Transport

The operating cost of the train are taken from similar projects is shown in **Table (3)**. Trains are usually depreciated over 30 to 40 years. [17]

Table (3): Train line operating costs

Train Operations	Unit	Average Cost $
Sales and administration	passengers	5.0
Track Control	train	90.0
Train servicing	Train-hour	95.0
driving	Train-hour	50.0
Operations/Safety on lines	Train-km	1.0
Energy on lines	Train-km	2.5
Maintenance	Train-km	5.0

To calculate the cost of train operation the following equation are to be used:

$$B_{1T} = C_T \times T \times V_T \times 365 \quad (6)$$

Where:

B_{1T} = train operation cost per year

C_T = train operation cost per hour

T = time of operation (hr/day)

V_V = number of trips per day

The track have the capacity of transporting 1.5 million passengers per year (average about 4000 passengers per day which require an average 500 vehicle per day between cars and buses with average 8 passengers per vehicle) and 6 million tons per year (16000 tons per day or 800 heavy vehicle), it is likely at the time of opening the track the train will operate at its maximum capacity. By applying Equation (6) B_{1T} = 3.2 million $ per year

The project usually operate 25 years as minimum before it need a replacement, the construction cost of adding the proposed line 1855 million $. **Table (3)** shows the cost of transporting the above passengers and goods.

Table (3): Cost of transporting passengers and goods in the proposed railway line

	Value in million $
The cost of transporting by train	3.2

7.4. Road Maintenance Costs

The existing roadway between Kirkuk and Sulymaniya cities may consider as rural roadway, which means that usually there are less traffic volumes than the urban roadways inside the cities, also the speeds of the vehicles may be in uniform amount and there are less stops in the route which results that the damaging effects of the vehicle is less than inside the cities. **Table (4).** [18]

7.5. The Costs of Accidents

Eliminating the accident costs (fatal, non fatal, and property damage). The data collection on the accidents are shown in **Table (5).**

Table (4): The maintenance Cost per year of the Kirkuk and Sulymaniya roadway. (The figures are collected from similar roadway maintenance projects in Iraq)

	Value in million $
Maintenance Costs per km per year	0.005
Total Maintenance Costs of the roadway per year	0.59

Table (5): The collected data of the accidents on the study area (The figures are collected from accidents damage claims in Iraq)

Type of accident	Number	Cost of the accident $	
Fatal	10	10000	100000
Non-Fatal	120	5000	600000
Property damage	125	1000	125000
Total Cost million $		0.825	

7.6. Saving in Passenger Time

The design speed in the train transportation is 120 km/hr and it is compared with the passenger car speed 90 km/hr and busses 60 km/hr. Table (6) shows the time saving when the proposed railway line is applied. Most workshops gives an extra salary of 4$ for any hour beyond working time and it is assumed that 50% of the time saving will be used in working. [10]

Also from field traffic survey, the number of passengers that using small vehicles (passenger cars+taxi cars) is 67% of all passengers, and the rest passengers (33%) are using busses.

Table (6) : Time saving when the proposed railway line is applied

Mode of travel	Journey time (hr)	Number of passengers	Total time (passenger.hr)
Train	0.98	1500000	1470000
Passenger car	1.3	1005000	1306500
busses	1.57	495000	777150
Total saving in time (passenger.hr)	(1306500+777150)-1470000=613650		
Percentage of the saved hours that will used in working	50%		
Benefit of Saving in Time $ per year	0.5*4*613650=1227300		

7.7. Environmental Benefits

It has long been recognized that road users do not pay the true financial cost of the environmental damage that they cause. Recent reports calculated that the costs of environmental damage, accidents and congestion per passenger kilometer travelled are 3-10 times higher for road than for rail**.** [19]

8. Cost- Benefit Analysis (CBA)

The cost-benefit analysis of the proposed railway track is shown in **Table (7)**

Table (7): The CBA of the proposed track

Type of Cost or Benefit	Value million $
Construction cost	1855
Train operating cost/year	3.2
Diverted vehicle benefit / year	62.5
Saving in accident benefit/year	0.825
Saving in time/year	1.23
Number of years *n* (years)	25
B in Equation (1)	74.29+0.59+0.825+1.23= 76.935
C_1 *in* Equation (1)	1855
C_2 *in* Equation (1)	3.2
NPV (applying Equation (1)) when the initial costs are considered million $ at i = 8%*	-1067.7886
NPV (applying Equation (1)) when the initial costs are neglected million $ at i = 8%*	787.2114
Internal Rate of Return (IRR) when the initial costs are. considered	9.5E-15

* The 0.08 interest rate is recommended by the Ministry of planning, Transportation department for the benefit cost calculation.

Most governments consider the transportation projects as strategic ones in the developing plans, and the initial costs of such projects are sponsored by government institutes.

As shown in **Table (6),** when the initial costs are neglected then the NPV = 787.2114 Million $.

The user will gain direct benefit when using the new railway line, also there are long ranges economic and social impacts on the two cities, most of these impacts have a contribution in the society developments.

The calculation of the NPV has been done using a series of interest rates as shown in **Figure (5).** The 0.08 interest rate is recommended by the Ministry of planning, Transportation department for the benefit cost calculation.

The internal rate return (IRR) is calculated by using the procedures shown in 4.1.3.and with the adding of initial costs, from **Table (7)** the IRR = 9.5E-15 which is a very small and cannot be accepted for the economic evaluation if the initial costs is considered. **Figure (6)** shows the calculation of the IRR with respect to NPV when the initial costs is considered.

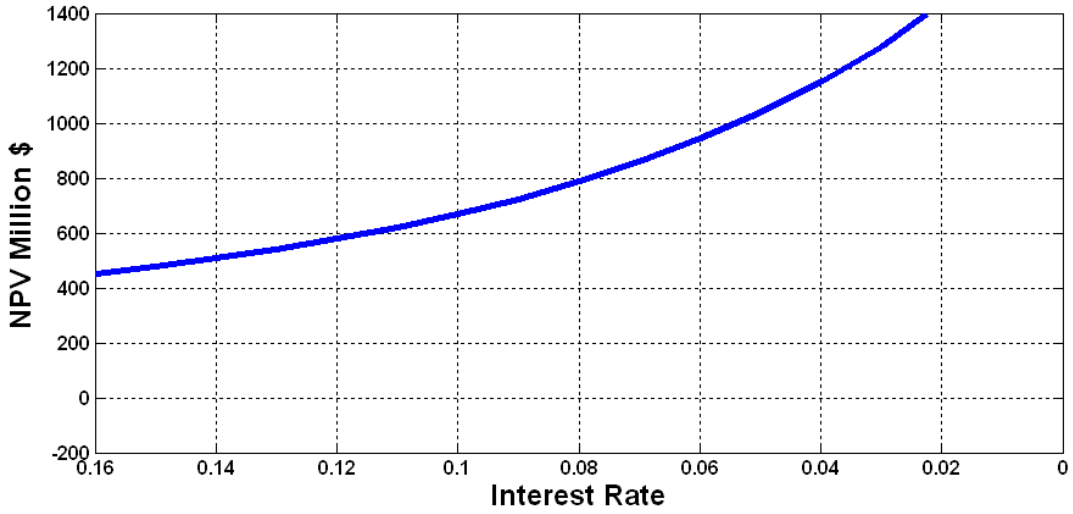

Figure (5): The resulted NPV according to interest rate values without considering the initial costs.

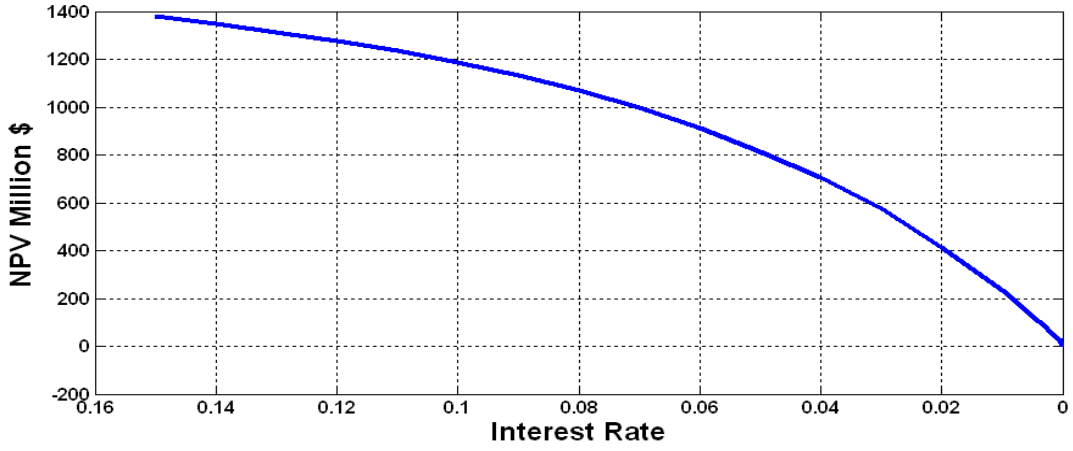

Figure (6): The resulted NPV according to interest rate values when the initial costs may considered.

9. Conclusions

The user benefit from adding a new railway track between Kirkuk and Sulymaniya cities has been analyzed. When the construction and other initial costs are added the economic evaluation is negative and results no user benefit, while in the real world there are impacts on the development of the society when such transportation projects are installed. There is a great user benefit in the proposed project when the operating, accidents, time saving costs and the ecological effects are considered. When comparing the travel costs of the passengers on the new railway line and the existing roadway, it will be great benefit towards the new railway only if the construction and other initial costs are not included. Such costs are usually sponsored by the government as a strategic plan for the economic enhancement of the area.

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