

Logistics in Yemen: Identifying Demerits on Lack of Railways in Yemen

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Abstract - This research paper is an observational study to propose an intermodal logistics in Yemen. If one asks today whether Yemen can be extended by railway lines, it is natural to answer that the geographical nature of Yemen does not allow the extension of the railway line. It is surprising that the Ottoman Empire decided more than 100 years ago to complete this project, but the fall of the empire deprived Yemenis of this Great achievement. Under the title of establishing a modern network of railways for metals, goods and passengers, in recent years, practical steps have been taken to establish a railway network in Yemen and linking it to an international network of economic feasibility studies, but the railway project in Yemen is still just studies prepared by several companies. During fieldwork and data collection, the authors has visited ministry of transportation to meet the representatives, to get the requested data of the Proposed railway project along with Yemen land transportation affairs authority, then the author visited designated area of the proposed project to meet the local authorities of each area to collect the data and discussed the main causes of the project's failure and delay along with that inspecting the security and services of the project's designated area, although the government has conducted several studies on this project.

Keywords: Logistics, Transportation, Optimization, Railways

1.0 Introduction

So little has been done a research of the transportation sector in the inside of Yemen; that any individual who lifts the veil for us in this piece of Arabia is achieving an accomplishment of abnormal geographical interest especially in railroad sector. Those who learn the

history of Yemen in the time of the Ottoman Empire, they will notice the extent of achievement in various fields, including transportation, telegraphic communication, infrastructure, administrative aspects, drinking water supply, etc. If one asks today whether Yemen can be extended by railway lines, it is natural to answer that the geographical nature of Yemen does not allow the extension of the railway line. It is surprising that the Ottoman Empire decided more than 100 years ago to complete this project, but the fall of the empire deprived Yemenis of this Great achievement .In a document dated 24 June 1888 in the archive of the Prime Minister in Istanbul that the Ottoman authorities agreed to extend the telegraph line from Jeddah (Saudi Arabia) to the city of Hodeidah (Yemen) with the necessary funds for the implementation of the project and that the necessary amount is urgently sent in order to start the implementation of this project (Ottoman Archives, Document No. DH 85242) . In another document, dated 30 July 1981, it was found that the telegraph line between Kamaran and Hodeidah had been extended because the distance between the two areas was very remote and there was no communication between the two areas except by small commercial boats owned by the people. Kamran Island had a quarantine centre, of pilgrims during the Hajj season, and therefore urgently need a direct telegraph line. (Ottoman Archives, Document No. MM 5259)

The railway is one of the largest projects to be completed in Yemen more than 100 years ago, a huge and great project that benefits the Yemenis. However, the internal and external disturbances of the Ottoman

Empire had become entangled, and most projects were suspended not only in Yemen but also in the most Ottoman states. But the hand of sabotage has spread to reach the Hejaz railway, which was carrying passengers and pilgrims from Damascus to Medina, which was completed between 1900 and 1908 at a distance of more than 1300 km. The completion of this great project and its occurrence is evidence that it was possible to accomplish this project. [2]. Under the title of establishing a modern network of railways for metals, goods and passengers, in recent years, practical steps have been taken to establish a railway network in Yemen and linking it to an international network of economic feasibility studies,

- Preparing the Feasibility Study for the International Coastal Railway [1]
- Preparing the economic feasibility study for the railway linking the mineral wealth areas [6]
- Modernization of the study prepared by a British company in 98 to link the populations of the port cities (the linear line, the minerals, between the cities)

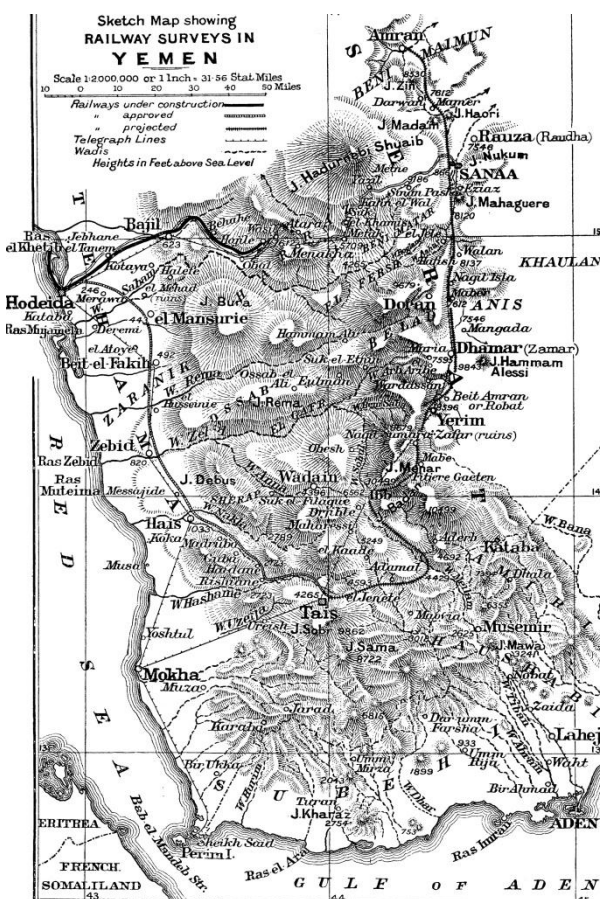
- *Figure 1: Sketch map showing Railway surveys in Yemen*

In 2013 there were talks between the Yemeni government and Russia, the outcome of the Yemeni-Russian talks committee was led by Deputy Minister of Planning and International Cooperation and Deputy Minister of Economic Development of the Russian Federation for the planning of the establishment of a local company in Yemen specializing in railways Under the supervision of the Russian leadership, a project that is the first of its kind as it aims to build an infrastructure For Yemen to be able to self-reliance in the coming stages, where the Russian administration will work on planning Monitoring, evaluation, training, rehabilitation, availability of necessary equipment and training of cadres [12]

2.0 Literature Review

Cargo transportation is progressively pushed towards the utilization of the railroad infrastructure rather than roads, which are actually over-utilized since they enable point-to-point conveyance of products with no mode change, coming about into moderately short transportation times. The primary reasons are the transportation costs on railroads are brought down by around half than those on street, the railroad transportation is significantly more secure: in ordinary conditions, a train has no association with different trains and is worked by professional drivers, who can likewise make utilization of programmed control system to anticipate human blunders, a decrease of the amount of trucks on street can diminish the road congestion in many highways and radically minimize the number of highways accidents [4]

As cargo transport is a developing challenge for metropolitan territories, there are calls to reintegrate rail cargo into urban coordination's. The utilization of railroad frameworks in urban coordination's should moderate negative externalities, for example, sound pollution, traffic, and air contamination. Extra qualities of rail transport are the utilization of road free infrastructure, giving a dependable auxiliary mean of transport, and the high vitality productivity. The utilization of railroad systems in urban coordination's should alleviate negative externalities, for example, sound pollution, and traffic or air contamination and to



achieve maintainability objectives. Extra qualities of rail transport are the utilization of road free infrastructure, giving a solid auxiliary mean of transport, and the high energy effectiveness, because of the systems attributes. [6]. The railroad is a standout amongst the most effective and ecological friendly to transport individuals and merchandise. The fast railroad has been growing quickly and the rail route mileage has expanded by 21.18% in China between the periods of 2006 – 2011. As indicated by China Statistical Yearbook 2014, China has the world's biggest fast rail network in December 2014 with 16,000 km of track in service. The Chinese government has proposed in its "Twelfth Five-Year Plan" that they would decrease energy utilization per unit of GDP by 16%, CO₂ outflows per unit of GDP by 17%, and SO₂ per unit of GDP by 8% by 2020. At present, the objective of accomplishing decreased utilization of energy and enhancing ecological effectiveness has turned into an essential errand of all levels of government. Transportation is a sector that fundamentally depends on resource use and energy utilization and is likewise essential for building a resource-sparing and ecological friendly society. With quick financial and social advancement as of late, transportation has turned out to be one of the quickest developing businesses in China. The further advancement of Chinese transportation area is confronting an asset and ecological requirement that from one viewpoint, there is a higher interest in transportation volume, and then again protecting the earth is essential. The across the country rapid railroad network, which stretches out to all regions and districts in China, comprises for the most part of regular track rail routes and recently built lines with a traveller volume of 2,122,992 million and cargo volume of 40.99 billion tons. Meanwhile, as a carbon outflow concentrated industry, transportation has been compelled by the universal community and national government regarding carbon outflow [3]. With the improvement of the economy, cargo transportation plays a more essential role in modern society. In like manner, this inclination delivers an exceptionally focused condition for various transportation modes, for example, railroad, road, air shipment and water carriage. To make a profit, diverse firms need to plan good transportation items and supply the advantageous services to attract freight. Among these modes, railroad transportation has near points of interest over

others on its security and transportation limit, most importantly, for the long- distance or vast scale cargo transportation. In railroad firms, it is attractive that the transportation plan should acclimate to the changing economy and administrative conditions, offer dependable, astounding, minimal service cost to their clients and afterward, clearly, make a profit [5].

As of late, road transport made an awesome commitment to our general public. In any case, some negative impacts, for example, air contamination; energy utilization and so on additionally rose in the meantime. Subsequently, a few administrators and researchers are thinking about redirecting some cargo stream on road to other transportation modes. Contrasted with road transport, railroad and water transport are better decisions for creating green transportation in view of their low energy utilization and carbon discharges. In this manner, the cargo modular move from road to rail is a potential means by which the negative impacts of transport can be lessened [2]

In 2011, the European Union expressed that 30% of road cargo more than 300 km should move to different modes, for example, rail or waterborne transport by 2030, and over half by 2050 [7]. Toward the end of 2015, the Ministry of Transport of China additionally prescribed that railroads and waterways ought to attempt more cargo transportation [9].

In any case, for inland transportation, the limit of inland waterways is typically restricted. In this manner, the railroad should assume control a large portion of the cargo from the road. As a rule, mass cargo is more appropriate for being transported by railroad. In any case, there is more mass cargo transported by road. For example, China in the previous quite a while has transported in excess of 100 million tons of coal long- distance by truck from western to eastern China. Consequently, occupying mass cargo from road to parallel railroad is a vital technique to lessen carbon emanations caused by the transportation sector. To examine the measures for shifting mass cargo from road to railroad, the stream conveyance on road and railroad arrange in specific situations and the variables which will impact the distribution should initially be acquired. The director would then be able to outline the measures in view of

the variables and how the operators impact the distribution. Recreating the stream conveyance by methods for flow task is a vital establishment for concentrate the arrangement for changing the stream among road and railroad [10]

3.0 Methodology

It is very important to move heavy freight by railway instead of road, to reduce cost and carbon emissions caused by the road transportation, railroad transport has the benefit of high volume and low carbon discharges, shifting cargo from road to railroad will help decrease the negative ecological impacts related to transport. In this research paper the authors attempt to use quantitative and qualitative research method, plan and execute fieldwork, collecting data from Competent ministerial bodies, ministry of transportation, Visit the specified area of the project (mineral wealth areas, coastal areas) etc. in Yemen, during fieldwork. Compile preliminary maps of the first alternative - Shahn / Aden and the second alternative - Muscat / Salalah / Sarfeet / Algeheiza / Aden. During fieldwork and data collection, the author will visit ministry of transportation to meet the representative to get the requested data of the Proposed railway project along with Yemen land transportation affairs authority, then the author will visit designated area of the proposed project to meet the local authorities of each area to collect the data and discussing the main causes of the project's failure and delay along with that inspecting the security and services of the project's designated area, although the government has conducted several studies on this project. After that the author will visit a the Minister of Transportation or a senior figure from the ministry for an interview to discuss the main challenges and constraints that causes the failure of the project and the delay to support the study, finally the author will visit Ministry of Public works and roads to collect preliminary maps of the International Coastal Railway (from Haradh to Shahn) and the economic feasibility study of the railway linking the mineral wealth areas (Al-Jouf and Marib Shabwa Balahaf).

4.0 Recommendation

Railway transportation can be a great alternative to road transport when the presence of many minerals and industrial rocks in large quantities across the country of Yemen compared to the high-cost and rickety fleet of land transport. The quantity and the weight of the industrial rocks, minerals and metals are usually high and heavy requires an instant solution to meet the demand of a suitable transport medium to transport more quantity at the lowest cost. Alternative transportation modes such as railways can carry goods supplies in higher amounts on a single trip as a cure for fleet size constraints of road transportation. Railways can cover the bulky goods as well as the longer distance and final miles can be covered using tours with trucks on road. This section will identify demerits on lack of railways in Yemen. The first step is to explain the main reasons and obstacles that have led to the failure of railway project plans since the first planning by the Ottoman government to the current government. Then analyse all collected data and identifying findings of stumbling railways projects in Yemen. Beside the author will make a comparison between transportation methods by railways over road mode transportation method (truck), Compare road condition and difficulties over railways. Investigate the main reasoning that led to the project's failure in a logical and sensible way.

4.1 Targeted transportation sector

Yemen's geology is characterized by an amazing diversity of tides and geological structures that are diverse and promising. The diversity of Yemen's geological structure has led to a diversity of mineral resources. There are numerous data supporting the economic presence of gold, zinc, lead and silver as well as copper and nickel in Yemen. The presence of many minerals and industrial rocks in Yemen in large quantities and good qualities, mostly located in populated areas, some of which have the necessary infrastructure and facilities, which facilitates the process of investment and exploitation and reduces the cost, These are a large number of sediments with economic indicators such as limestone, gypsum, zeolite, perlite, biomass, rock salt, feldspar, quartz, ascorbic, industrial elastomers, silica sand, granite and

Gabbro. The mineral wealth that Yemen possesses is one of the most important factors encouraging mineral investments in many fields. This makes the railway construction project very important because it is of great importance in reducing freight costs, compared with other more expensive means of transport for instance road transport. Economists, however, saw the project as a strategic ambition that had great benefits for the national economy, but ruled out Yemen's economic ability to create it at the present time in the absence of external funding [11]

The map demonstrates the railway route from Hodeida to the capital city Sana'a was first proposed, the rising through the slopes to the capital to be made along the Wadi Fersh, an unfriendly locale, the primary chain of Serat being crossed at 8038 feet. This was not acknowledged totally, but rather a line over the coast front plain through Bajil and among the lower slopes similar to Hajile, which lies at the foot of the steep crags on which is the castle of Menakha, was authorized, and it was relatively finished. Menakha is an essential key position almost somewhere between Hodeida and Sana'a. The trace of another and much longer route was studied, likewise beginning from Hodeida, yet making a profound U-shape circle toward the south and passing not a long way from Kataba on the border of the British Aden colony, before turning north to Sana'a, which would be passed to reach Amran still more further north. The proposed line would go through Beit-el-Fakih Zabid, Hais, Taiz, Ibb, Yarim, Dhamar and Maber to Sana'a, this project being eventually endorsed by the Ottoman Government.



Figure2: Road network Map in the Republic of Yemen. Source: Yemen Land transport Affairs Authority, Yemen

The map demonstrates the location of the population, the terrain, the road network in addition to the proposed routes of the railway. This map is the proposed railway project after the accession to the study of the establishment of a railway system for the Gulf Cooperation Council countries: After the approval of the Gulf Cooperation Council to include Yemen in the study the council where the agreement was signed to expand the study to the port of shipment instead of the city of Muscat in Oman, a team of connoisseurs in As well as the company executing the study for the purpose of collecting the necessary data for the preparation of the study and field clearance and access to the track extending from (Shahn) Al-Mahra to Aden and a recommendation was submitted by them to the General Secretariat of the Council to adopt one of the two alternatives for the track as follows,

- The first alternative - Shahn / Aden
- The second alternative - Muscat / Salalah / Sarfeet / Algheiza / Aden

Analysing data and identifying findings that led to the project's failure

After collecting all data, finally the authors analyzed to identify the demerits on lack of railways in Yemen. This will determine the sensible and logical reasoning that led to the stumbling and project failure.

Implementation challenges

According to the ministry of transport they have strategic ambition to build a railway that brings great benefits to the national economy but the railway project in Yemen is still just studies prepared by the ESCWA and provided Yemen and some Arab countries \$ 8 million to prepare these studies by a British company and there are two other studies from the United Nations and by the Gulf Cooperation Council but it is difficult at present to build the railway project in Yemen in the absence of government economy, security and political stability.

Economic challenges

Economically it is difficult for the government to bear the financing of this type of projects because it continues to suffer from severe weakness in providing basic services for the consumption of ordinary citizens such as saving electricity, the budget deficit amounted to about 978.3 billion riyals in 2018, with expenditure of about 1.465 trillion riyals, bringing Yemen's deficit 33% of its national output. . Whereas, the total cost of the project is \$ 1.29 billion for the construction of the international railway project, which will represent a rapid transport revolution that will link Saudi Arabia through Yemen to Oman through the coastal strip of Yemen [8]

Security challenges

The situation in Yemen is still very deteriorating and a large number of the directorates of Yemen, where there is no security and authority, and the state are still disintegrated. Yemen suffers from a major problem, which is the lack of security in all governorates of the Republic of Yemen and the state suffers from repeated aggressions on electricity towers, As well as the disruption of oil tankers and goods in the main travel lines as well as attacks on oil pipelines, the situation in Yemen is still very disturbing and there are a number of directorates of Yemen where there is no security and authority and the state is still broken which makes the establishment of this giant project currently "illogical." the government must develop security performance and establish security and stability and provide Encouraging conditions to start the implementation of this project as it is intended to be a safe way to transport passengers and goods [11]

Political stability

Since 1962, after the glorious revolution, Yemen has been living in a cycle of political instability accompanied by devastating wars that have caused economic disasters that have made this rich country one of the poorest Arab countries. Political and security instability is due to the sharing of the rule of law among the forces of the tribal, military and religious ruling centers. These groups have taken control of the center in Sana'a either by agreement between them at intervals or by control of one force or coalition of forces at the expense of the other, Sparking conflict between them and their renewed power-

sharing efforts. In 1990 the unit was established between north and south Yemen. In 1994, the powers differed and then fought to undermine political stability, the political system of Yemen has continued in the phenomenon of political instability until the events of Sa'ada, which began armed confrontations between the government and the Houthis since 2004, and since 2006 demonstrations and disturbances in many southern provinces on the pretext of secession of northern Yemen from the south, resulting in the so-called 2011 revolution that Were eliminated by mutual concessions between those ruling powers. Yemen still suffers from political instability to this day; especially in the last fifty years because it is far away from the real reason is the absence of the state [4]

5.0 Conclusion

In conclusion, the mineral wealth that Yemen possesses is one of the most important factors encouraging mineral investments in many fields .This makes the railway construction project very important because it is of great importance in reducing freight costs, compared with other more expensive means of transport for instance road transport. The several attempt and the strategic ambition of the government of Yemen to build a railway that will bring a great benefits to the national economy is still just studies prepared by several companies, due to several difficulties at present to build the railway project in Yemen in the absence of government economy, security and political stability. Economically, the budget deficit in Yemen amounted to about 978.3 billion riyals in 2018, with expenditure of about 1.465 trillion riyals, bringing Yemen's deficit 33% of its national output. Yemen is still very disturbing and there are a number of directorates of Yemen where there is no security and authority and the state is still broken which makes the establishment of this giant project currently "illogical."

Yemen has been living in a cycle of political instability accompanied by devastating wars that have caused economic disasters that have made this rich country one of the poorest Arab countries. Political and security instability is due to the sharing of the rule of law among the forces of the tribal, military and religious ruling centres. The priority now is for the Yemeni government to seek to restore the state,

impose security and the rule of law, before thinking about strategic projects.

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