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# A Case Study on Importance of Transport Engineering Economics

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**ABSTRACT:** The Government of India recognises the importance of the private sector in bridging the resources gap in investment and improving the operational and managerial efficiency in the transport sector in order to address capacity constraints and deficiencies in the existing transport infrastructure and meet rapidly growing demand. The government is actively pursuing policies to promote private sector involvement in the development of transport infrastructure and services. The experience is involving the private sector in transport development in India is the focus of the paper it provides a broad overview of government policies and various initiatives that have been undertaken to promote private participation following various models. The important relationship between prices and economics of scale has pointed out the importance of transport leading to the introduction of Transport activity in economic policy debates. Early years of 20<sup>th</sup> century reveal a new type of economic analysis of the transport market based on the principle of sustainable development.

**KEYWORDS :** Transportation system, NHAI, CIRT, CRRI, IRC, Sustainable development ,Economic growth

## I. INTRODUCTION

Since the 18<sup>th</sup> century, the importance of transport was highlighted by Adam Smith. In Smithian concept, transport was a productive branch that creates value, but not the use value. In chapter 3 of “The Wealth of Nations” Adam Smith has developed the importance of labor division in society. As business increased and produced more goods than they can sell locally, it needs access to wider markets, at which stage, water transport gained an important role. A well developed internal transport system leads to linking economic activities by identifying locations that offer favorable conditions off production, there is even a geographical boundary with the imposed prices of certain products and the area criteria.

- **Definition** :- Transportation Engineering is a branch of civil engineering that is involved in the planning, design, operation, and maintenance of safe and efficient transportation systems. These systems include roadways, railways, airways and waterways.

## II. ROLE & IMPORTANCE OF TRANSPORTATION ENGINEERING

- **Role of Transportation Engineering**:- Transportation contributes to the economical, industrial, social and cultural development of any country. Transportation is vital for economic development of any country. Every commodity needs transport facilities both at the production stage as well as distribution stage. In the production stage, transportation is essential for carrying raw materials. Whereas in the distribution stage, transportation is required to transport products from factories to the distribution centres. Thus an effective and adequate system of transportation is required for the economic, social and cultural development of a country. The 21<sup>st</sup> century is known to be the age of digital world. There has been the adoption of computers to a great extent. Today without computers and Internet one cannot survive as we are dependent on these machines for almost all our work. Taking into consideration starting from home to education till banking and even corporate functioning everything has now been automated to computers. Computers contain all our important data in the digital format. With this the need to store the digital data has increased and virtual environment has replaced the physical storage for storing all our credentials as shown in Fig. 1. The most devastating challenge of cloud is to prevent the unauthorized deletion of the stored data on cloud because one can easily delete the stuff without any proper authorization. The data deletion is totally dependent on deletion of nodes that are pointing to some information in Virtual Machine.



The importance of a transportation of a country is comparable to the veins in the human body. Just a veins helps to the health of human, similarly the transportation keep the health of a nation in good condition by keeping the people and materials moving from one place to another place. Following are the importance of transportation.

1. They play an important role in the economic, social and commercial development of the country.
2. They help in cultural development of the country.
3. They help in political development of the country.
4. It plays a vital role in development of rural areas of the country.
5. They improve the employment opportunities.
6. Improves the contact between two countries.
7. Improves the living standard of the country.
8. It helps to improve science and technology.
9. It helps in industrial development throughout the country.
10. Enhances the import and export of the country.

#### **Importance of Transportation in different aspects of life:-**

Transportation plays a major role in the daily life of human beings. It is necessary for things to be moved around and as transportation systems have developed over time, the speed and efficiency of these systems have improved drastically. The importance of transportation is showcased in how individuals, businesses, and governments rely on it to access resources.

A society cannot function optimally if it does not have measures in place to facilitate transport. From movement to work to travel around the world, being able to arrive at various places or deliver different items on time is vital for overall productivity and sustainable development. People, resources, jobs, and economies all need seamless movement to keep the entire world moving forward.

1. Importance of Transportation in People's Lives:-It is hard to imagine living in a world without access to transport. Since time immemorial, people have come up with ways to move around rather than remain stagnant in one place. Even when technology was at the stage of infancy and numerous modes of transportation were yet to be invented, there was always a way to take people, animals, and objects from one point to another. While some people may take the role of transport in their lives for granted, it has become increasingly necessary to discuss and understand how different life would be without it, especially within a contemporary society.
  2. Work and Commerce:-Regular access to transport has a major effect on economic activities. Many businesses and industries need efficient and fast transport in order for them to deliver and provide raw materials and products and maintain stable ventures that can generate revenue. Economic growth relies on access to dependable and effective transport that makes it possible for trade to spread across a broader range of stakeholders. Transport offers numerous opportunities within the employment sector. Traffic control, pilots, captains, delivery services, and drivers are some of the jobs that are provided through the industry.
  3. Connections and Convenience When individuals look for jobs or premises for their businesses, one of the main factors they consider is the commute. They usually seek to find great access to transport and this is among the considerations that determine how good a particular location is. Improving links to transport boosts an area's popularity and subsequent development. This is why it seems like several bridges and roads are constantly being constructed. It is important to cut down the travel costs that consumers and businesses are subjected to while making it easier for everyone to get to where they need to be. People would find it extremely challenging to keep up with the pace of a progressive world if they were unable to access transport.
  4. Developing Economies:-The main role of transport is based on the need to provide and enhance access to various locations for individuals and businesses within both personal and professional domains. In the business world, this purpose consists of connecting businesses to stakeholders such as other businesses, customers, and suppliers. In regards to households, people use transport to reach shops, institutions and work premises. Transport creates a connection between people and their recreational and personal activities as well as medical and social facilities. Transport is a vital sector and the amount of expenditure and investment in various operations has far-reaching effects on the world's economy. This can be seen in how an increase in fuel costs affects expenses in homes.
- Modes of Transportation in Civil Engineering –There are three basic modes of transportation, these are land, water and air. So the modes of transportation also depend upon these three mediums. Road and railway



transport are developed on the land, similarly waterways and airways are developed on water and air respectively. Thus there are four major modes of transportation as given below :-

- Roadways or highways
  - Railways
  - Airways
  - Water ways
1. Roadways or highways: Roadways are the means of transportation on land. Roadways are also known by highways. It consists the modern highway as well as city streets, feeder roads and village roads, catering for a big range of vehicles and the pedestrians. This is the only mode which is giving maximum service to one and all. It is possible to provide door to door service only by road transport
  2. Railways :- The steel tracks laid on the ground, over which the trains move is known as railways. Railways have been used for long as well as for short distances and also for urban travels. For longer distances, railways transportation is more effective and advantageous than highways
  3. Airways :-In the airways, air crafts and helicopters are used. Air system of transportation is one of the fastest system. Air system of transportation provides comfortness and also save time to the passengers. But this system is more costly compared to all other modes of transportation
  4. Waterways :- The transportation by water is the slowest among the four modes. This mode of transportation uses oceans, rivers, canals and lakes for the movement of boats and ships. By waterways human beings and materials are used to transport from one place to another with the help of ships and boats etc. Transportation by this system is possible between the ports on the sea routes or along the rivers or canals where inland transportation facilities are available.
- The economic importance of Transportation:-The development of transportation systems takes place in a socioeconomic context. While development policies and strategies focus on physical capital, recent years have seen a better balance by including human capital issues. Irrespective of the relative importance of physical versus human capital, development cannot occur without both interacting as infrastructures cannot remain effective without proper operations and maintenance. At the same time, economic activities cannot take place without an infrastructure base. The highly transactional and service-oriented functions of many transport activities underline the complex relationship between its physical and human capital needs. For instance, effective logistics rely on infrastructures and managerial expertise. Because of its intensive use of infrastructures, the transport sector is an important component of the economy and a common tool used for development. This is even more so in a global economy where economic opportunities have been increasingly related to the mobility of people and freight, including information and communication technologies. A relation between the quantity and quality of transport infrastructure and the level of economic development is apparent. High-density transport infrastructure and highly connected networks are commonly associated with high levels of development. When transport systems are efficient, they provide economic and social opportunities and benefits that result in positive multiplier effects such as better accessibility to markets, employment, and additional investments. When transport systems are deficient in terms of capacity or reliability, they can have an economic cost such as reduced or missed opportunities and lower quality of life.
  - At the aggregate level, efficient transportation reduces costs in many economic sectors, while inefficient transportation increases these costs. Besides, the impacts of transportation are not always intended and can have unforeseen or unintended consequences. For instance, congestion is often an unintended consequence in providing free or low-cost transport infrastructure to the users. However, congestion is also an indication of a growing economy where capacity and infrastructure have difficulties keeping up with the rising mobility demands. Transport carries an important social and environmental load, which cannot be neglected.

### III. CONCLUSIONS

1. Transport has a crucial role to play in economic development. It has been recognised that the provision of a high quality transport System is a necessary in the benefits of national development.
2. It is necessary to foster the development of the various transport modes in an integrated manner that will lead to the realization of an efficient, sustainable and regionally balanced transportation system, where each mode of transport operates in its field of economy and usefulness.

With each stage of development of human society, a certain mode of transport has been developed or adapted. However, it was observed that throughout history, no mode of transport, pause solely responsible for growth. Thus the



development of modes of transport was correlated with economic structures and mobility of labour. The difficulty of separating the specific contributions of the transport system of a country's economic development derives from the fact that during the development of the transport system may precede or follow simultaneously economic progress.

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