

Transportation, Concept, and Its Impact on Economic Development: A Review from the Perspective of the Mountainous Region

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Abstract

Transportation, which originates from the Latin words trans, whose meaning is across," and portare, which means to carry, emphasizes prominently the occupations of men, advanced civilization, expansion of domestic and international trade, economic growth, etc. The countries whose geography is highly covered with mountains have been heavily affected by the transport network, and the same is true for northeastern mountainous India, where it is impossible to move goods through road transportation. These situations not only harshly affect the residents of such areas but also result in a lack of economic growth, the formation of spatial relationships, and revenue production. As a result of this, there is a need to keep these problematic things in the attention of country residents and their governments, for which a critical analysis is needed through a systematic review that can present a clear concept of transportation and their impact on the economic growth of the regions. Motivated by the same, the present work has been proposed to conduct a review article on transportation, its concept, and its impact on economic development from the perspective of the mountainous region. The work presented in the article will be of great interest to working professionals in this area.

Keyword: Transportation, concept, mountainous regions, economic growth.

1. Introduction

A mountain range, sometimes known as a hill range, is a group of hills or mountains connected by high terrain. A set of mountain ranges that are comparable in form, structure, and alignment and that developed from the same cause—typically an orogen—is referred to as a mountain system or mountainous belt. India's northeastern mountain range runs through the northern portion of the nation, from the Sikkim Himalayan area to the Arunachal Himalayan region. It includes both the eastern and southern parts of the area before moving towards its southernmost point. Eastern Tripura, Nagaland, North Cachar in Assam, a significant portion of Manipur, and Mizoram are all included in the eastern highlands, which start in the Dibang valley and Lohit region of Arunachal Pradesh. The entire region can be divided into two sections, including the northern hilly portions of Sikkim and the Arunachal Himalaya and the eastern and southern Patkai-Purvachal Hills [1]. In figure 1., topographical map of Northeast part of India is shown.

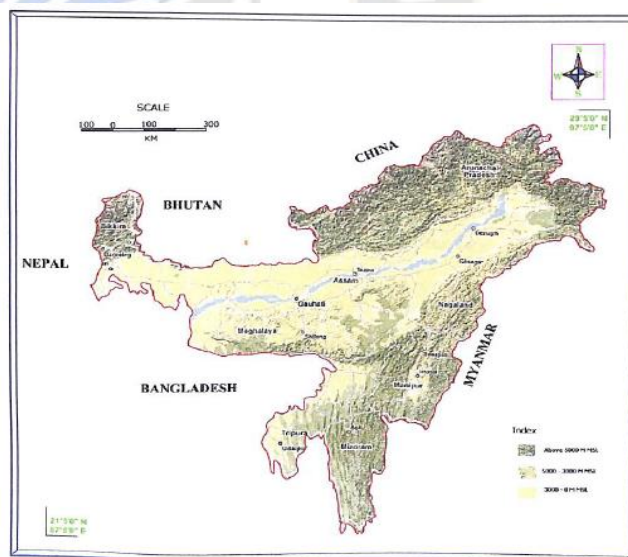


Figure 1: Topographical map of Northeast part of India [7]

Hills and mountains range in height from over 7000 meters to about 1000 meters. These hills and mountains were created over a very long period of time through a combination of sedimentation, folding, and uplift. They were all built using bed sediments from the Tethys Sea that were present in the area during the Tertiary period.

In mountainous places, vehicle transport is obviously not the best solution because building a road network on a slope is

challenging. In mountainous places, laying road haulage is also costly and time-consuming. Natural disasters including landslides, earthquakes, and avalanches are frequently susceptible in mountainous terrain; these disasters frequently harm road networks and cut off vital communication. In the Himalayan region, landslides and avalanches are important issues that result in both financial loss and fatalities. Road accidents frequently occur in mountainous areas. Ropeways and airways are the best transportation options in the mountainous area.

In mountain regions governance is increasingly recognized as essential to sustainability and human well-being [3]. Due to their geographic complexity, commons status, vulnerability to environmental change, and effects of external political and economical processes, mountains pose unique problems for successful governance. As results of this, there is lack of development in term of road transportation, economical and trading etc. Due to this, it is necessary to keep these problematic issues in the minds of the citizens of the country and their governments, which necessitates a critical analysis through a systematic review that can present a clear concept of transport and their impact on the regional economic growth. A review paper on transport, its concept, and its effects on economic growth from the perspective of the mountainous region has been recommended for the current task as a result of the same motivation. Working professionals in this field will find the work given in the article to be of considerable interest.

2. Concept of transportation

The act of moving of individuals, creatures, and products from one location to another is referred to as transportation. Different modes of transportation, including air, land, sea, cable, pipeline, and space transportation, can be used to move the goods.

The transportation theory has been proposed [4]. According to the author, trans is a Latin word that means "across," and portare means to convey, thus forming a word called "transport" Through transportation, people can move between locations using a variety of vehicles and substantial infrastructure.

Due to transportation, desired outcomes, including passenger travel and freight shipments, are possible, along with various unfavorable outcomes such as air pollution, noise, traffic jams, collisions, etc.

Further, he elaborated that transportation is both a personal activity and a social responsibility. For any country, it's impossible to overlook the crucial role that transport plays in society.

Within a different context, author of [5] has elaborated transportation into a narrative universe describes the sensation of becoming entirely lost in a story's world and forgetting about the outside world. This experience is crucial to understanding

how stories or narratives affect people's attitudes and views. It is also linked to media enjoyment.

Despite the fact that transportation has frequently been employed as a metaphor for narrative experience, psychologists now view transit into a narrative world as a separate mental process that involves the integration of attention, imagery, and emotions.

Furthermore, author of [6] has defined transport as an activity for rising economies evolution, which is a crucial factor in human wellbeing and development.

However, the majority of policymakers view road fatalities and injuries, traffic congestion, air pollution, and petroleum dependence as the most urgent issues resulting from this rising transport activity and in the developing world's fastest-growing economies, these issues are extremely severe.

Moreover, author of [7] has been look into the function of Transportation in society. According to author, the most frequently cited environmentally beneficial modes of personal transportation include non-motorized transportation, pedestrian and bicycle transportation, and train travel.

Air travel appears to be an issue, while individual-focused road travel has the worst environmental impact.

Regarding the movement of commodities, rail transport is thought to be the most environmentally friendly, whereas road transport is believed to be the worst.

The appraisal of water transport is confusing since it has a sizable danger of accidents, and the construction of the infrastructure poses a sizable interference with the ecosystems of the countryside and rivers.

In this context of transportation, however, the studies have been mostly focused on its social importance, but the significance of transportation when evaluating overall trade has historically gotten remarkably little attention.

Hence, in the succeeding section, a literature review on transportation and its impact on domestic and international trade, growth, and economic development have been presented.

3. Literature review on transportation impact on domestic and international trade

Literature is an essential component of each type of social science research activity. It identifies existing and future knowledge in a specific area and allows a researcher to clearly identify what's already been done and what work remains in that area. Here in this section a literature review on transportation impact on domestic and international trade has been presented

The more recent studies now have focused on the importance of the transportation industry in determining commerce and given the topic a more critical analysis .

For example author of [8] presented how the internal structure of trading partners is connected through density economics in transportation worldwide. For this, authors introduce an innovative economic geography model with two countries and four regions that partially endogamies the magnitude of trade expenses.

The author had made the assumption—contrary to the current literature—that international unit shipping costs are influenced by the amount of trade because density (dis)economies occur.

The author demonstrates how the topography of one country might influence agglomeration (or dispersion) within another through the commerce channel.

Furthermore, density diseconomies result in a smooth agglomeration phase that exhibits a singular stable equilibrium, in contrast to density economies that may result in many equilibrium and catastrophic agglomeration in both countries.

Similarly, in [9], author look into the way competitive transport markets affect where economic activity occurs and how trade is organized. For this, author has carriers offer shipping services for manufactured goods, and freight prices to establish in order to clear the transport markets.

Author summarized that due to the expenses, businesses in areas that are net exporters of manufactured goods pay higher freight rates. The concentration of production in one area raises freight prices to serve international markets from there, acting against specialization and the agglomeration of enterprises since demand for transport services depends on the spatial distribution of economic activity.

Consequently, when freight rates are endogenously determined rather than when they are determined ex ante, a more uniform spatial distribution of enterprises and production prevails at equilibrium.

In his paper [10], explored the causes and effects of transport price imbalances with respect to shipping direction and how this impacts economic geography. It is demonstrated that the relative size of the embarkation region has no negative impact on the equilibrium transport price of the shipment travelling in a certain direction.

Author also demonstrates that the directional imbalance in transit pricing reduces the sustainability of the core-periphery patterns and boosts the stability of the symmetric patterns. In other words, the imbalance works as a force of dispersion.

Further in article [11], author conducted an empirical analysis of global marketplaces and backhauls for commerce, transportation, and misbalancing of trade.

In this work, author created and estimated a model of global trade and transportation that takes the consequences of enduring trade imbalances into account in order to make new contributions to this field of study.

In addition to the significance of transportation for evaluating overall trade in the country, numerous empirical studies have examined a wide range of aspects of the connection between trade and transportation.

For example, author of [12], gives empirical investigations results of the simultaneity between trade and transportation through calculating panel co-integration relationships that control the long-run systemic supply and demand relationships of the international transport sector.

Author of [13], look into the connection between trade and transportation expenses. The cost of transit was regarded as an external element in earlier studies.

The causal connection between commerce and transport costs, however, may be working both ways because increasing trade volume also lowers the unit cost of transportation.

The association between transport expenses and trade is then examined by using a gravity model to study sectoral imports from the European Union for five South American countries. By estimating both equations at once, the author examines the endogenous nature of the trade and transport cost variables.

In article [14], author demonstrated the significance of the transport sector in determining where economic activity is located in two-region economic geography models of the capitalist free-wheeling and core-periphery kinds.

In the given environment, carriers that are in competition with one another provide transportation services for moving manufactured goods between areas, and freight prices are established endogenously to unify the transport markets.

Each carrier agrees to the maximum capacity for a roundtrip, which presents a straightforward logistical challenge: "returning empty" incurs costs, and those costs raise the freight rates charged to manufacturing companies.

Because the spatial distribution of economic activity affects demand for transport services, agglomeration in one area raises freight rates to serve foreign markets, creating an extra dispersion factor according to author.

It has been observed from the review of various reported investigations on transportation and its impact on domestic and international trade that the mode of transportation and the cost

of transportation highly impact the expansion of domestic and international trade in the country.

If the same has been concern for mountainous regions, which are associated with limited modes of transportation, the impacted can observed at height.

To improve the connectivity of such regions in terms of various transportation modes, various types of difficulties must be

studied and understood that are the hurdle for in the connectivity of such regions via transportation. The next section has been reported on the same for mountainous regions in India

Table 1 shows the analysis of reviewed articles on transportation and its impact on domestic and international trade.

Table 1: Analysis of reviewed articles on transportation and its impact on domestic and international trade.

Author	Year	Area of research	Major findings	Research gap
C.H. Cooley	1894	Transportation	Theory of Transportation	<ol style="list-style-type: none"> 1. No economic aspects of transportation have been has been explored. 2. Issue in regards to transportation has been absent
M.C. Green	2008	Transportation	Theory of Transportation	<ol style="list-style-type: none"> 1. Only theoretical aspects of transportation has been discussed, empirical investigation are absent. 2. No economic aspects of transportation have been has been explored.
S.K. Ribeiro et al.	2007	Transportation infrastructure	Transportation is an activity for rising economies evolution.	<ol style="list-style-type: none"> 1. Empirical investigations are absent.
I. Dostál	2011	Transportation and its Role in society.	Importance of the transportation industry in determining commerce	<ol style="list-style-type: none"> 1. The study have been mostly focused on its social importance. 2. Empirical investigations are absent.
K. Behrens	2011	The internal structure of trading partners and its connection through density economics in transportation worldwide.	Topography of one country influence agglomeration (or dispersion) within another through the commerce channel	<ol style="list-style-type: none"> 1. Only explanatory analysis has been done
K. Behrens	2006	Transportation, freight rates, and economic geography	Businesses in areas that are net exporters of manufactured goods pay higher freight rates.	<ol style="list-style-type: none"> 1. Not all economic aspects has been covered
T. Takahashi	2011	Transport prices and economic geography	Created and estimated a model of global trade and transportation that takes the consequences of enduring trade imbalances into account.	-----
F.L. Friedt, and W.W. Wilson	2015	Trade, transportation and trade imbalances in international markets	Empirical investigations results of the simultaneity between trade and transportation through calculating panel co-integration relationships that control the long-run systemic supply and demand relationships of the international transport sector.	<ol style="list-style-type: none"> 1. Investigation only deals with road transportations
I. Martínez-Zarzoso, and C. Suárez-Burguet,	2005	Connection between trade and transportation expenses.	<ol style="list-style-type: none"> 1. Applied gravity model to test connection between trade and transportation expenses. 	Research investigations were only limited to European Union for five South American Countries only.

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2. Endogenous natures of the trade and transport cost variables are examined.
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K. Behrens, and P.M. Picard	2011	Transportation, freight rates, and economic geography	Because the spatial distribution of economic activity affects demand for transport services, agglomeration in one area raises freight rates to serve foreign markets, creating an extra dispersion factor	-----
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Either transportation has a significant impact on the economic growth of the region, but vehicle transport is obviously not the best option in hilly areas because constructing a road network on a slope is difficult. Laying roads for haulage is particularly expensive and time-consuming in mountainous areas. Mountainous terrain is particularly vulnerable to natural disasters like landslides, earthquakes, and avalanches; these catastrophes frequently damage road networks and disrupt essential communication. Landslides and avalanches are significant problems in the Himalayan region that cause both material loss and deaths. Mountainous environments are prone to road accidents. Hence, some suitable means should be suggested to overcome all such difficulties. In the next section, a literature review on difficulties in the economic feasibility of transportation in mountainous regions has been published.

4. Literature review on difficulties in the economic feasibility of transportation in mountainous India

Northeast India and the northern section of India make up the mountainous areas of that country. The region's difficult geography and innate backwardness are primarily to blame for its severe transportation problems.

The existence of a dependable and effective transportation system is crucial for the development of mountainous resources. Already, a large number of goods are exported from the region to other nations. Future production of these exportable commodities has a large potential.

A dependable transportation network would make it possible for an increase in production and manufacturing operations, which would be reasonable to expect.

But Northeast's and the North's weak topographical and political linkages to the rest of the country have hampered their development. According to reports, urban centres in the Northeast have expanded more quickly due to the management of basic requirements rather than trade. The business infrastructure, including transport links, has not even been fully constructed between urban regions.

To achieve agricultural and industrial expansion, an appropriate means of air travel must be built. That can be possible if mode of transportation is available to achieve the same. Hence this

section has been reviewed the difficulties investigated in previous work in the difficulties in the economic feasibility of transportation in mountainous India.

As per Ministry of Road Transport & Highways [15], In hilly areas, creating an effective transport network is very difficult. These regions have sparse rail and air networks, and the expansion of the road network faces technological difficulties. In this context, ropeways have become a practical and secure alternative form of transportation. The government has planned to build ropeways in the nation's hilly regions.

Up until now, the country's highways have been developed, and the road transport industry has been governed by the Ministry of Road Transport and Highways (MORTH).

The Government of India (Allocation of Business) Rules 1961, however, were changed in February 2021, allowing the Ministry to additionally be in charge of the development of ropeways and alternative mobility solutions.

The action will help the industry by establishing a regulatory framework. The Ministry of Transportation will also be in charge of construction, research, and policy in this field as well as the growth of ropeway and alternative mobility solutions technology.

This budget allocation will also cover the development of the institutional, financial, and regulatory framework for the technology.

According to [16], the physiographic structure has a significant impact on the road transportation. It is incredibly challenging to build and maintain roads in mountainous and arid areas.

The author of [17] has written on a variety of reasons why the North Eastern region's development has been rather gradual. Author emphasized that building blocks of economic growth are roads, especially in the Northeast. Since alternative routes of transportation in the Northeast are either prohibitively expensive or challenging to build, roads are a crucial mode of transportation in hilly terrain. However, the region's road system is often lacking.

The region continued to have a fairly sparse railway network for geographic and occasionally strategic reasons. In order to meet the enormous transportation demands of even one state,

let alone eight states, air services cannot be the only option. Only now, with the unveiling of India's "Look East" policy, has the region's development received the attention it deserves.

Thus, the tale of the development of the area includes more than only how the surface transportation network takes shape. Further, the best mass transit system in the nation is thought to be the railroads.

However, it is difficult and costly to establish up an extensive rail network in the NE region's rugged terrain. This explains why there are no railway lines at all or only a few in hilly regions like Arunachal Pradesh, Manipur, Meghalaya, and Mizoram. Last but not the least, The need for air connectivity in the Northeast region is nothing new. Air connectivity is absolutely necessary for travel due to the terrain.

Roads and railroads require a lot of capital. Building up air infrastructure is substantially less problematic and is therefore ideal, even for gaps.

Economic and Political Weekly also wrote on the same issue of North East Connectivity Problems [18]. Poor transportation connectivity within and among the seven states, in addition to with the rest of India and nearby nations, has historically been a problem for the North East.

This has hampered not only daily life and means of subsistence but also national security and regional growth. India is falling behind even at home as China expands and solidifies its control over its own border regions as well as adjacent nations through motorways throughout Asia and also Europe.

The North East's key location and recent geopolitical changes in the area call for the establishment of strong infrastructure and multimodal connectivity.

Furthermore, one of several factors contributing to the North East's regional backwardness is its poor transport connectivity. This connectedness relates to numerous transit modes and routes that facilitate the flow of people and products.

Transport inside and between the seven sister republics, as well as between mainland India and its neighbours Bangladesh, Nepal, Bhutan, Myanmar, and China, is also covered. There are negative effects on local tourism, trade, and commerce as well as the locals' day-to-day options for living and making a living due to the deteriorated transportation infrastructure and lack of regional connectivity.

Construction time [19] has also wrote on connectivity, challenges, & combat in north-east India. It has been mentioned that unquestionably essential to the country's balanced regional socioeconomic growth and integration is the expansion of the NER's connection infrastructure.

However, there are several negative aspects of the area that make this difficult, such as the hard (and frequently hilly) topography, dispersed habitation, delays in land acquisition, social unrest, environmental approvals, and a lack of high-quality building supplies, among others.

The situation in the NER is such that there is an excessive reliance on road transport, which raises costs and lowers the competitiveness of the region's products. In order to increase efficiency and lower logistical costs, among other things, it is advised to use a variety of transportation modes.

It is crucial to have transport vehicles that are best suited to the specific region's climate, topography, and population density when it comes to rail and aircraft connectivity.

Author of [20] gave highlights on transportation and trade in North-East region of India.

Building an effective transit network has always been challenging due to the area's rugged terrain, according to [20]. Assam has been connected to the rest of India by the construction of numerous bridges over the Brahmaputra and the conversion of previous metre gauge routes into broad gauge.

The region features a notable network of airports and air offerings that is fairly dense. With the proposed Trans-Asia road network and the international airport in Guwahati, North-East India may be extremely successfully connected to Southeast Asia, to its economic advantage.

Tea, oil and petroleum products, silk and silk products, as well as a range of cottage industry products, are replacing the region's traditional trade. Hence, it has been essential to build such network in the other part of such region too.

Author of [21] has conducted his research on issues and difficulties with Nagaland's road transport. Author has found that in the course of time, improved road mobility might transform Nagaland from a province that primarily imports goods to one that exports them.

Investment in transportation is essential given the underdeveloped nature of both the economy and transportation.

The provision of infrastructure and services would become efficient and sustainable if the challenges raised were taken into consideration. When creating and implementing policies, it is important to consider how development, transportation, and the environment are interconnected.

Government investment in this is essential because, despite the fact that the financial costs involved are internal and essentially sunk (with the exception of ecological and societal costs), the gains from such investments are largely external and have a longer gestation period and break-even point. That explains the

province's almost complete lack of private investment in that area.

Author of [22] has conducted a survey of proposal to enlarge roads in a hilly area and the effects on the environment: Kumaun Himalaya, Uttarakhand. Author found that any place's economic and social development depends greatly on its roads. In the modern era, life without transportation is unimaginable.

The ability to transfer people and goods from one location to another is essential to modern existence. Roads are crucial from a strategic standpoint as well as from a social and economic one.

Due to the Himalayan mountainous region's geographic location and geological environment, building roads in the hilly area is a challenging task. Therefore, unregulated construction is not allowed.

If we disregard the geographical and environmental aspects of the hilly region when building, this could be a key contributor

to landslides that result in disasters. One-line roadways have economic benefits.

An expansion of domestic and international trade in the nation is strongly influenced by the mode of transportation and the cost of transportation. However, in mountainous regions, the development has been impacted by the lack of transportation infrastructure. India's northern and eastern region faced numerous difficulties in the establishment of transportation. These challenges are geographical and environmental aspects of such a region. However, the establishment of air trav. can be a possible solution to these challenges.

But it also faces various difficulties. In the next section, air services in northeast India and the northern part of India and the difficulties faced to establish this have been discussed.

The analysis of reviewed articles on difficulties in the economic feasibility of transportation in mountainous India has been presented in table 2.

Table 2: Analysis of reviewed articles on difficulties in the economic feasibility of transportation in mountainous

Author	Year	Area of research	Major findings	Research gap
K.R Dikshit et al	2014	Transport and Trade in North-East India	Highlighted the importance of transport and trade in north-east India, specifically Assam.	Empirical investigations are absent.
T.Y. Humtsoe	2020	Research on issues and difficulties with Nagaland's road transport	Author has found that in the course of time, improved road mobility might transform Nagaland from a province that primarily imports goods to one that exports them.	Empirical investigations are absent.
C. Arya, and J. Joshi,	2021	Road widening project in hilly region and its impact on environment	Author found that any place's economic and social development depends greatly on its roads. In the modern era, life without transportation is unimaginable.	-----

5. Literature review on relation between transportation and economic development

With just a quick glance at the country's geography, one may quickly determine the culture and economic progress of the country. Effectiveness in transport, which is supported by a network of backward and forward links, results in economic development. Many academics and investigators who have conducted extensive research and studies on the development of transport have summarized the functional value of transport.

A survey of transport network research reveals that several studies have been carried out in India as well as other countries around the world. Numerous academics have been drawn to this area of research to investigate the numerous structural and functional characteristics of transportation.

Numerous quantitative methodologies have been used to identify links between the transportation sector and the regional economy. However, it is important to determine whether or not

the following research relates to the current investigation of transportation and its effects on socioeconomic development.

According to [23] transport can be viewed as both an economic and a social service, such as daily commutes from a person's place of residence to their places of employment or regular travel for leisure, shopping, or other activities. Each social locale or community in both rural and urban settings creates its own sort of transport demand in response to the diverse service and facility patterns that are available.

Author of [24] mentioned that nation cannot conduct its economic, social, or political affairs without the basic infrastructure for spatial exchanges, namely transportation and telecommunications. These are made up of infrastructure and services that change over time due to technical advancements, economic policies, geographical conditions, and contextual factors.

In [25], the interactions that characterize the connections and dependence between geographic areas are expressed by the transport links between and within centers.

One could think of a region's transportation network as a reflection of its economic growth and wealth. It prepares the way for the fundamental infrastructure necessary for the area's expansion and overall development.

The faster urbanization process, which is characterized by the dispersion of activity and the unrestrained occupancy of urban space, has had an impact on the development of the transport system.

A region's transport system is crucial to decreasing spatial inequities and fostering a development that is both balanced and integrated. It aids in the efficient use of a region's resources and the pursuit of economic balance.

Economic development may take the lead on transportation upgrades, or vice versa. They drive economic development by lowering transport costs, and vice versa: when economic growth puts a strain on the current transportation networks, economic development drives infrastructural improvements [26].

There are several studies that demonstrate how road travel affects a region's or nation's economy and society. In rural areas, when the transportation network is improved, there is evidence of an improvement in agricultural productivity, opportunities for employment, industry expansion, and industrial production [27].

According to [28] transport acts as a fundamental component of the social and political infrastructure, facilitating the movement of people, ideas, information, and things.

With degrees of socioeconomic growth, the interconnectedness and intensity of a region's transport network fluctuate over time.

Additionally, it enables social groups to transcend linguistic, cultural, and environmental obstacles. It was discovered that development's essential infrastructure was concentrated along the road and deteriorated as distance from the road increased.

According to [28], In addition to economic benefits, a successful transport system offers social benefits like a higher standard of living, alterations in attitudes, the spread of information and ideas, the adoption of innovations, and development initiatives.

As a region's socioeconomic growth progresses, so do the interrelationships and intensity of its transportation network. Additionally, a region's transportation network measures accessibility and economic growth in a cause-and-effect manner and is a crucial indicator of a rising economy.

Given the close relationship between transportation patterns and human activities, a region's economic development can be reliant on the availability of transportation infrastructure as per [29]. This is particularly apparent in rural and underdeveloped economies, where the expansion of transit channels can result in an improvement in socioeconomic growth.

Similarly, the extent and effective utilization of a transport network are key factors in the socioeconomic development of a region Infrastructure for transportation is crucial for the social, economic, and political growth of a place according to [30]. Transportation also alters the amount, calibre, and aptitude of people who conquer space.

As a result, the type of transport methods became a gauge of the area's economic and social progress. By lowering social barriers and enhancing rural residents' mobility, transport development has aided in social progress and unification [31].

According to [32], although natural resources are present in mountain locations, the areas' greater accessibility makes economic growth burdened with high transportation costs, which presents a barrier to development.

As a result, these places are still underdeveloped and do not have the fundamental infrastructure needed to advance society and the economy.

Author of [32] has demonstrated the key relationship between transportation and economic development of the nation. In this study, the author investigates two issues with the American transportation revolution of the 19th century. First, how much of the major shifts in regional population dispersion in the United States and the shifts in industry structure within regions can be attributed to transit improvements.

Second, how significant were advancements in transport for welfare gains? We discover that the primary factor influencing where individuals resided and what industry they worked in was advances in transportation. Additionally, the author finds that the welfare benefits throughout the period of 1840–1860 would have been just half as large without the transport improvements.

Author of [32] investigated on the research on how a transport power's economic development is impacted by its infrastructure. In order to investigate how traffic infrastructure affects economic growth, this article chose the 2008–2018 panel data of 31 provinces, cities, and autonomous areas across the nation.

It then employed a fixed effects model and a moderating effect. And the study discovered: In terms of regulating effect, the impact of railroads on the economy is more constrained by the level of urbanization, and the higher the level of urbanization, the more significant the effect;

From a national perspective, roads perform better than railways on economic growth, and railway's leading role of the economy gradually increases; The degree of investment and labour input greatly support economic growth as control variables.

Numerous geographers have studied the significance of transport and development. The following general conclusions can be made for India's agriculturally based economy.

1. The social status level along with economic transformation of rural residents who have moved closer to the area of the road network have undergone substantial historical changes. Road accessibility consequently modifies the socioeconomic structure of an area.
2. Transport assists in the growth of non-agricultural and other's market activities that are essential for the overall growth of an given area through demand and supply balance.
3. By increasing forward and backward connection among the agricultural and industrial activities, it helps to changes the scales of the local economy.
4. By establishing a standard infrastructure for rural development, it aids in selecting the best sites and growth points in the region.

Given the close relationship between transportation patterns and human activities, a region's economic development will be reliant on the availability of transportation infrastructure. This is particularly apparent in rural and underdeveloped economies, where the expansion of transit channels can result in an improvement in socioeconomic growth.

Any type of economic activity cannot works I absence of the transport sector, and as a region's economic processes grow and diversify, demand for transport rises accordingly. More efficient transportation is required as human activity becomes more centralized and specialized, and transportation is what supplies the fundamental infrastructure for the expansion and development of significant economic activities.

Although natural resources are present in mountain locations, the areas' greater accessibility makes economic growth burdened with high transportation costs, which presents a barrier to development. As a result, these places are still underdeveloped and do not have the fundamental infrastructure needed to advance society and the economy.

The North-Eastern Region of India falls behind in terms of development as a result of numerous geographic limitations. Due to the lack of activity diversity, there is a weak spatio-functional organization of economic activities. Even though this topic has been the subject of numerous studies and research projects in different parts of India, nothing has been accomplished for commercialization for air services in these

areas. It has been observed that, across such regions, no service has been established for the commercialization of air travel services, including aircraft and helicopter services, for business purposes. In order to test and validate the possibilities of commercialization of air travel services for business purposes in high risk prone northeast region of Indian including Leh, Sikkim, Tawang valley, the present research has been proposed.

According to [27], there are several lines of study that show an overall association between transport investments and rates of economic growth. Although it is clear from this examination that investments in transportation can have an impact on economic growth, this information is not helpful for planning organizations as they assess different project ideas for how to use the available funds for transportation improvement.

Similar analysis was made of the connection between transport and economic growth by[58]. Their research shown that the arrival of modern mobility creates a wide range of new economic opportunities and is therefore likely to foster economic growth throughout the early phases of economic expansion.

Author in [29] demonstrated the necessity of assessing the regional economic growth effects of every single highway, railroad, airports, and marine port initiatives , especially when it comes to the transportation agencies' making choices. The shape and locations of the suggested facilities, as well as the potential changes they could make to travel times, prices, access, dependability, and connection of travel routes and services, may be recalled. It has long been understood that these factors can have significant effects on regional economies.

Four criteria have most recently been established by [31] for analyzing how transit affects regional economic development. Relevant transportation investments fall into two categories: capital enhancement, which involves incorporating cutting-edge technology to increase the effectiveness of the current transportation system, and capital expansion, which refers to the physical expansion of the current transportation system. (2)

Information required assessing the investment's economic impact. (3) Useful techniques for analyzing the economic impact. (4) Properly disseminating the findings and training professionals on the financial impacts of transport investment.

In order to quantify the various indirect and direct impacts of spending by the government on poverty in the countryside and increased productivity in India, [30] created a model. They came to the conclusion that the government of India should priorities increased investments in creating rural roads, especially in the economically depressed districts, in order to eliminate rural poverty.

In depth analysis of article on relation between transportation and economic development has been presented in table 3

Table 3: Analysis of article on relation between transportation and economic development

Author	Year	Area of research	Major findings	Research gap
R. C. Tiwari, and S.Tripathi	1987	Analysis and Planning of Rural Transport System in Gorakhpur District, Uttar Prades	Each social locale or community in both rural and urban settings creates its own sort of transport demand in response to the diverse service and facility patterns that are available.	Empirical investigations are absent
I. Salomon	1991	Geographical abstracts and human geography of Israeli transportation system	Demonstrated how the technical advancements, economic policies, geographical conditions, and contextual factors impacted by transportation	1. Empirical investigations are absent. 2. No correlation has been investigated between different variables of the study.
I. S. Yambem, and D. S. Naoroibam	2010	Transport relationship between imphaland other important centres in the country	Author demonstrated the interactions that characterize the connections and dependence between geographic areas are expressed by the transport links between and within centers.	Absences of Economic development and aspects.
P. Marr, and C.Sutton	2004	Impacts of Transportation Changes on the Woodworking Industry of Mexico's Purepecha Region	When economic growth puts a strain on the current transportation networks, economic development drives infrastructural improvements	No empirical evidence
D. S. Rawat and S. Sharma,	1997	Development of a road network and its impact on the growth of infrastructure in Almora district in the central Himalaya	Author discovered that development's essential infrastructure was concentrated along the road and deteriorated as distance from the road increased.	No empirical evidence
M.I. Nadiri, and T. Mamuneas,	1996	Contribution of highway capital to industry and national productivity growth.	Region's transportation network measures accessibility and economic growth in a cause-and-effect manner and is a crucial indicator of a rising economy.	No correlation analysis has been performed
G. Weisbrod	2008	Economic development impact of transportation project	Transportation alters the amount, calibre, and aptitude of people who conquer space.	No empirical evidence

Based on the literature review conducted in this section, it has been found that a strong transportation network helps expand the market for goods. Additionally, it can facilitate the transportation of equipment, fuel, and other supplies to the locations of production. Furthermore, it makes production resources and distant areas accessible. Hence, there is a need to make the residents and government of the remote area aware of the need to improve their transportation network, which can help with the future development of the region.

6. Conclusion

In this article, a review of transportation, its concept, and its impact on economic development from the perspective of the mountainous region in India has been conducted. It has been observed that in today's civilization, there are ultra-modern luxury cars, automobiles, subways, and bullet trains. However, access to such a form of transportation is scarce in India's mountainous regions. India's north-eastern and Himalayan regions are crucial to the country's expanding economy, its strategic ties to East Asia, and its access to Southeast Asian

territory. Communication and trade between India's neighboring states and nations, as well as in the North and North East, can improve with the construction of transport corridors. Despite its rough terrain, the area lacks suitable transportation and communication infrastructure for a variety of physical and economic reasons. Hence, residents and governments of such regions must be aware of this so that the economic development of these regions will grow.

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