

Problem and Method

had made no serious attempt. However, at present, this research area has been elevated to a certain explored point due to the courtesy of some prominent scholars of social sciences and economics.

2. Problem and Method:

In this chapter, we studied our research problem and methodology. We applied different methods according to our selected objectives.

2.1.Statement of the problem:

Growth and Development of Railways in North Bengal and its Impact on Society and Economy (1870-1950)

2.2.Research Area:

"Growth and Development of Railways in North Bengal" denotes the introduction and development of railways in North Bengal between the periods of 1870 to 1950; the term as well as signifies the factors and nature of the development of the railways in the same region. At present, the term 'North Bengal' only indicates the northern part of West Bengal in India, including the districts of Malda, North Dinajpur, South Dinajpur, Darjeeling, Jalpaiguri and Coochbehar. In our study area, the term 'North Bengal' designates the northern part of colonial Bengal, including the districts of Pabna, Rajshahi, Bogra, Rangpur, Dinajpur, Malda, Darjeeling and Coochbehar state also, which basically indicates the fields within the study area.

In order to analyze the economic impact of railways on the society of Northern Bengal, we have concentrated our study between the periods of 1870 to 1921. In our economic study area, we will study the comparative role of the railways with the conventional mode of the transport system. It is indispensable to study the nature and role of the roadway and waterway mode of transport system before and after the foundation of the railways in the Northern part of Bengal. The acceptance of the railways as a superior carrier for the internal and external trade will be practically examined by the comparative analysis of the export-import trade. We will also try to find out the role of the railway communication to accelerate the process of commercialization of agriculture. Railway's impact on industrialization and de-industrialization in North Bengal is also a significant part of our discussion. As well, we will examine of the role of railway to the price convergence and price gap for the selected essential products of North Bengal. We also select the study on wage structure and purchase power of the common labourer to identify the economic condition of the marginal people.

In our social area, we select the socio-cultural impact of the economic

changes due to railways on the natives of North Bengal. Study on demography, environment, socio-cultural assimilation, impact on gender status and the racial challenge are as well incorporated with the same.

2.3. Review of Literature and Research Gap:

The establishment of railways in India undoubtedly increased the speed, capability and reliability to the transport system and in most cases; it vastly reduced the transport cost. The research area of Indian railways is highly vast and diversified. So, the scholars of different streams or subjects of social and pure science have tried to solve a number of research problems in the vast research area of Indian railways. However, we selected the review of literature individually according to our precise research area to achieve our stipulated objectives. We have studied the limitation of the literature in relation to our specified area and objectives.

i. Review of Literature Related with the Foundation and Development of Railways in North Bengal:

E.C. Dozey (1916) has drawn a picture of the development of the railways in northern Bengal in his famous historical encyclopedic guide book '**A Concise History of the Darjeeling District Since 1835**'¹. He described elaborately about the extension of the railways in a particular chapter **Railways Extension in Northern Bengal** of the same book (part IV). I think this is the first attempt to draw a picture of the railway's development in North Bengal in 1916. Historically, the document is very important for the further study. However, according to our research objectives, the study is inadequate.

Mukul Mukherjee preferably has discussed in his article "**Railways and their impact on Bengal's economy, 1870-1920**"² in "**Railways in Modern India**" edited by J.Kerr Ian about the development of Railways in Bengal for the impact of railways on Bengal economy. The article mainly focuses on the impact of the railways on Bengal economy. The study partially touches our area, but it is inadequate according to our objectives.

The Early History of East Indian Railway (1845-1879)³ by Hena Mukherjee is based on the author's doctoral thesis submitted to the London University in 1966. This book will be a useful addition to the literature available on the origin and development of railways in the country. It is a valuable account in respect of the early railway establishment in Bengal. It tells the story of the first three decades of the East Indian Railways, and thus the study is rather limited in its scope according to our study area.

Sarah Hilaly (2007) in her book **The Railways in Assam: 1885-1947**, has drawn a picture on the history of railways in Assam⁴. It describes process of the introduction of railways and their socio-economic impact in Assam under colonial rule. Placing the expansion of the rail network in Assam within the broader framework of railways expansion in India, the variations in the primary scheme of railways adopted for Assam has been brought out. The role of the railways in accelerating the nature as well as the describes the impact and changes the railways brought about on trading patterns, demographics, the local population and industrial development. This title is suitable for those interested in economic history, for those who would like to know more about the history of Assam, and railway.

Prof. Ratna Roy Sanyal shortly has drawn a picture in relation to the introduction of railways in North Bengal in her article, "**Introduction and impact of the Railways in North Bengal during the second half of the 19th century**" in the **North Bengal University Review**⁵. It has also kept away from the precise study on the nature of the development of railways in North Bengal.

Sunil Kumar Munshi (1980), in his project work "**Geography of Transportation in Eastern India under the British Raj**" has done a precise work on the transportation patterns in Eastern India⁶. It presents considerable insights as well as material on changes within those patterns. The book also discusses the development of the railways in Eastern India under the British Raj and highlights the public policy on transport development. The book equally has emphasized in the development of inland navigation and roadway development in the Eastern India. The study is very significant in respect of Bengal and eastern India, but the study is insufficient for the reasons behind the foundation of railways in North Bengal. It partially indicates the nature of communication development, which related with colonial transport policy.

Coochbehar State Railway and its impact on economy and communication of the State, this is my first published article on railway published in 2011⁷. The article has drawn a detail picture about the foundation and development of railways in the Coochbehar State. Concerning our study area, the study is partially supportive to draw the full sketch to the development of railways in northern Bengal. It is a micro-level study and obviously has a limitation in relation to our study area. The article has drawn a detail picture about the foundation and development of railways in Coochbehar State.

Arunava Das (2008) has examined the role of Darjeeling Himalayan Railway (DHR), in the development of Darjeeling between the years 1878 to 1900. The article, "**Role of Darjeeling Himalayan Railway, in the development of Darjeeling, 1878-1900**" as well discusses the background of the foundation of railway in the hilly

track like Darjeeling⁸. He studies the development of Darjeeling as a sanatorium, but the study mainly concentrates on the impact of the DHR in the development of Darjeeling district.

Bhawna Rai (2011) elucidates few imperative proposals for the further extension of the DHR. She thoroughly highlights the proposal of the DHR extension towards Nepal, in her article, “**The Darjeeling Himalayan Railway and the Untold Story of Its Extension.**⁹” The study, furthermore, discusses the extension of the same. However, according to our area of research, the study is valuable but inadequate.

Dhananjoy Ray (2002) has drawn a picture of the transport condition of North Bengal in historical perspective. The study as well indicates the ancient and medieval transport structure for the same region. In his article, “**Uttarbanger Path**” (Bengali) he mainly traced on the districts of Darjeeling, Jalpaiguri, Malda, Dinajpur and Coochbehar State¹⁰. The study mainly discusses the transport condition of the mentioned districts during the colonial period. The work is limited relating to the development of railways in the same region.

‘**Darjeeling and its Mountain Railway– A Guide and Souvenir**’ is another valuable work published by Darjeeling Himalayan Railway Company Limited in 1921¹¹. The book illustrates the detail route of the DHR. It mainly published like as a tour guide. However, the book has some historical importance, and this is useful for earlier study of the Darjeeling district. The work has some limitation with regard to details scholarly analyses behind the foundation and development of the railways in Darjeeling.

II. Review of Literature Related with Comparative Study Between Railways and the Conventional Mode in North Bengal:

A Bengal Atlas: Containing Maps of the Theatre of War and Commerce, on that side of Hindoostan¹², Compiled from the original surveys by James Rannell; and published by order of the Court of Directors for the affairs of the East India Company in 1779. The book is the important geographical work and discusses the routes of internal navigation of Bengal. It also indicates the direction of routes and its distances from Calcutta through the inland navigation. We as well attain a valuable account of the navigation routes from Dacca, Murshidabad and Patna. It too indicates the area of Bengal Province during 1778.

A Description of the Roads in Bengal and Bihar by **James Rennell** is another important work, which printed by order of the Honourable the Court of Directors of the Company in 1778¹³. He composed the first accurate European maps of India. The description highlights the routes and direction of the roads in Bengal and Bihar. It

helps us to draw the picture of the roadway communication in 18th century Bengal and North Bengal.

Rennell was the Surveyor General of Bengal Surveys between 1767 and 1777. This is his credit. He completed first ever the survey of the Bengal, and map published on a 12-mile scale. He prepared two separate maps showing major roads and inland navigation channels, which constitute a most important source of our knowledge of transportation in eastern India before the British Raj.

All the above works of Rennell's are undoubtedly, precious source for sketching the transport history of Bengal. Definitely, we get valuable information about the transport condition of the 18th century Bengal. The study also touches the transport condition of the northern Bengal for the same period. According to our study area, we need a comparative analysis between the different modes (Conventional vs. Railway) for the late 19th century Bengal and North Bengal. Thus, the Rennell's works are obviously limited in respect of our objectives and study area.

A Geographical, Statistical and Historical Description of the District of Dinajpur in the Province or Subah of Bengal by Doctor Francis Buchanan (Hamilton)¹⁴, has drawn a picture in the form of geographical, statistical and historical description of Dinajpur district. Undoubtedly, it helps us to draw the picture of the transport conditions of the first half of the 19th century of North Bengal. We get some valuable information about the pre railway transport condition, mainly by the conventional mode like waterway and roadway. It helps us to draw the picture of the transport conditions of the first half of the 19th century of North Bengal. We get some valuable information about the pre railway transport condition of the conventional mode like waterway and roadway.

However, the study has some limitation in respect of the comparative analysis between railway and conventional mode.

Mukul Mukherjee preferably has discussed in his article “**Railways and their impact on Bengal’s economy, 1870-1920**” in “**Railways in Modern India**” edited by **J.Kerr Ian** about the comparative transport cost per mound-mile concerning Bengal. The study is significant with respect to examine the relative transport cost between the railway and roadway. The study has critically examined the factors behind the rise of the railway as a superior carrier.

However, the study is limited regarding the findings of comparative transport cost between railway and waterway. As well, the work on Bengal perspective, according to our objectives we need a micro level study in respect of northern Bengal.

Sarah Hilaly (2007) as well has discussed the pre railway transport system in

Assam in her book **The Railways in Assam: 1885-1947**. Where, she has drawn a picture of the conventional transport system. The study is very important in respect of the water transport system which highly related with our study area. She has also discussed the effect of water transport on the peasantry. Undoubtedly, in respect of Assam, it is a vast analysis on the transport condition and its overall impact, but the study regarding comparative analysis between the conventional mode and railway in North Bengal is inadequate.

Sunil Kumar Munshi (1980), in his book “**Geography of Transportation in Eastern India under the British Raj**” has done a precise work on the transportation patterns in Eastern India¹⁵. The book discusses the development of the railways in Eastern India under the British Raj and highlights the colonial policy on transport development. The book equally has emphasized in the development of inland navigation and roadway development in the Eastern India. The book has mentioned the problem of rail-road competition. The study is inadequate in respect of our selected objectives for this chapter.

III. Role of Railways in the Merchandise Traffic in North Bengal:

Mukul Mukherjee (2001) critically analyses the comparative role of railway in the merchandise traffic in Bengal perspective. He also studied the share of different transport systems in the trade of Calcutta. The study as well indicates the role of railway to import of raw jute into Calcutta. The article too indicates the comparative rice-trade (import and export) of Calcutta by different modes. Mukherjee partially calculated the role of the North Bengal State Railway in the merchandise trade of Dinajpur, Ranjpur, Jalpaiguri, Rajshahi and Pabna. The article partly studied the role of railway in the merchandise traffic of North Bengal, but the study is inadequate according to our research objectives¹⁶.

Sarah Hilaly (2007) as well discussed the role of the railways in the merchandise traffic in Assam. In a different chapter, *Railways and Their Relation with other Industries* she examined the role of railway in coal exploration and trade. She studied the role of railway on petroleum production and trade. The study significantly indicates the role of railway to carry the products like tea, timber, jute, rice and cotton in Assam. Undoubtedly, the study has a limitation in respect of our research area and objectives¹⁷.

John Hurd (2001) has studied the role of railway in the merchandise traffic in Indian context. He studied the growth of quantity of the grains and pulses carried by railways between the years 1880 to 1941. Study indicates the growth of net metric ton kilometers per running kilometer in Indian context. The study mainly indicates that between 1902 and 1912, ton kilometers per track kilometer rose 67 percent and

between 1912 and 1918-19 they went up another 28 percent. However, we don't get any comparative analyses between railways and other conventional modes¹⁸.

IV. Railways and the Commercialization of Agriculture in North Bengal:

There are series of discussion regarding the impact of the railways on the agriculture economy. The findings more or less agree in view that the railways took the essential role to extend the agriculture market due to high technological benefit.

S.C. Ghose (1918) significantly has studied the impact of railway on the agriculture economy in his book '**A Monograph on Indian Railway Rates**'. He calculated 'Enquiry into the Rise of Prices in India'; according to it; he has mentioned that the railways have enabled the rayots to dispose of their surplus production at a fair price, thus increasing their income and their purchasing power, which is again shown by the increase in imports, especially in articles, which do not constitute bare necessities of life. The area under cultivation has generally increased with the advent of railways¹⁹. However, the study has some limitation in respect of our objectives.

John Hurd (2001) argued that, the agriculture sector of the economy was deeply affected by the widening of markets. For the first time, prices in India were susceptible to any significant shift in world prices. Indian agriculture became linked to world trade cycles. As a part of this linkage, farmers' decision about which crops to plant were affected by prices set in International markets; for example, agriculture began to commercialize. According to Hurd, commercialization brought far-reaching changes to rural areas. Greater specialization and the opportunity to export agricultural commodities raised the value of farm output in districts with access to railways²⁰.

Another important study of the rice trades in the *Burdwan* district of Bengal by **Achinatya Kumar Dutta**(2012), also indicates the significant role of the railways in the process of agriculture commercialization in the second half of the nineteenth century. According to him, 'rice received considerable commercial significance to the expansion of agricultural commercialization in the second half of the nineteenth century when it was linked to the railway system. *Burdwan* had the advantage of having a wide network of railroads, connecting the district with the market towns of Bengal, including Calcutta and other provinces, which meant beneficial access to new markets. *Burdwan* had a huge surplus of rice, and this could easily be transported by railway'²¹.

Binay Bhushan Chaudhuri (1970) also argued that the absence of transport facilities not allowed the rapid flow of commodities. The prices were largely determined by regional factors. The advent of a modern transportation system by railways brought about a closer integration of national, regional and local markets. Railways succeeded to link several cultivated regions with many trade centers and numerous feeder roads brought into existence by railways. The feeder roads were also added with the railway network. The internal as well as the external markets of the agricultural products of Bengal thus tended to expand²².

V. Railways ; Industrialization and De-industrialization in North Bengal:

Amiya Bagchi in his article, **Deindustrialization in Gangetic Bihar 1809-1901** studied a careful statistical comparison of Buchanan Hamilton's survey of a number of Bihar districts in the early 19th century with the 1901 census data. Amiya Bagchi (1976) examined evidence on handloom spinning and other traditional industries in Gangetic Bihar, an area of eastern India, collected between 1809 and 1813 by the East India Company surveyor Dr. Francis Buchanan Hamilton. Bagchi compared Hamilton's data with the 1901 Census estimates of the population dependent on industry for the same area. His major findings are a decline in the percentage of population dependent on industries from 18% to 8%, and a massive fall in number of cotton spinners and weavers²³. The study suggests that most of the de-industrialization took place in the first half of the century in Gangetic Bihar.

David Clingingsmith and Jeffrey G. Williamson studied in the article, **India's Deindustrialization in the 18th and 19th Centuries**, whether the de-industrialization shocks and responses were big or small is then assessed by comparisons of the Indian experience with other parts of the periphery. According to their study, 'India reindustrialized between 1750 and 1860, and two main epochs, with very different de-industrialization causes, distinguish that century. The first epoch runs from about 1750 to 1810 and was an indirect result of the dissolution of the Mughal Empire. As central authority waned, revenue farming expanded, the rent burden increased, warfare raised the price of agricultural inputs, and regional trade within the subcontinent declined, all serving to drive down the productivity of food grain agriculture. Grain prices rose, and given that ordinary workers lived near subsistence; the nominal wage rose as well. As a consequence, the real wage in Indian textile manufactures increased, hurting India's competitiveness in the export market.' 'By 1860, India completed a century-long two-part transition from being a net exporter to a net importer of textiles. A secular rise in the terms of trade stopped, turned

round, and started a long-run fall that lasted until the late 1930s. A deterioration in the terms of trade meant that the import competing sector (textiles) was no longer being penalized by unfavorable external price shocks. By the late 19th century, India's deindustrialization was over, and the country began a period of slow reindustrialization²⁴.

John Hurd critically analyses the impact of railways on industry in his article '**Railways**'. According to John Hurd, 'in the manufacturing sector the effects of railways on output and employment were equally mixed. Before railways, virtually no modern industry existed in India. By transporting raw materials at lower cost and carrying finished goods to internal markets, railways played a major role in the growth of India's modern industry. That this growth was extremely limited, however, is evidenced by the fact that the percentage of the total workforce employed in industry did not increase before the Second World War. There is no doubt that with that introduction of railways local industries which had been sheltered from competition by the high costs of transport were forced to compete with industries outside the local region. An example is the handloom industry, a major source of employment in the pre-railway era. Hurd also argues, 'whatever the absolute gain or loss in non-agricultural employment, in net terms railways did not alter the composition of the labour force in the major sectors of non-agriculture—i.e. at the all-India level approximately the same percentage of total workers was employed in trade, industry, and services at the beginning of the period under consideration as at the end. Similarly, the proportion of workers in agriculture and non-agriculture did not alter significantly, and India remained a predominantly agricultural country'²⁵.

Trend of Industrialisation in Bengal, 1901-1931 is another useful writing related to the development of industrialization in India by **Raghabendra Chattopadhyay (1981)**²⁶. While the Bengal Presidency area follows the same pattern of de-industrialization as India as a whole, when the Presidency area is disaggregated into its three constituent provinces, the provinces of Bihar and Orissa are seen to have suffered from de-industrialization during the period studied in this paper, and the Province of Bengal stands out as the newly industrializing area, notwithstanding the destruction of traditional industries. Bihar and Orissa, hinterlands in the industrial map of colonial India, followed the familiar pattern of de-industrialization and their rate of deceleration was so high as to more than offset the industrialization of Bengal province. When data for manufacturing working force, which is taken here as an indicator of industrialization, are compared for different regions and for India as a whole, it is found that while the country as a whole was witnessing the destruction of the industrial working force over the decades,, Bengal and Bombay were taking shape as the new industrially developed regions. These pockets did not, however, have any significant 'spread effect' for the rest of India. This paper studies the situation in

Bengal Presidency as a test case. While Bengal and Bombay suffered from a cyclical downturn in industry in the late 1920s, the impact of the Depression in the industrial sector appears to have been limited to these two areas only. There was no sign of depression in the modern industrial field in Madras. Study of this phenomenon is likely to throw up new facts pertaining to India's industrial history. This article highly traced on the regional imbalance in India. The study as well strengthens need of regional study.

Therefore, the study of industrialization in the agriculture region like northern Bengal is imperative. Where, the growth and decline of industry and the role of communication development is essential objectives of our study.

VI. Role of Railway on Price Convergence and to Reduce the Price gap in North Bengal:

A huge literature exists on commodity price convergence across nations, but more relevant for the purposes of our study is the research on convergence within India.

Thomas Erry (1943) indicates in his study ***Western Prices Before 1861***, that with the introduction of steamships in America, price differences for lard, pork, and wheat flour between New Orleans and Cincinnati fell by over 70 percent between 1816 and 1860²⁷.

Matthew Slaughter (2001) studies the same pattern between 10 goods prices for six large U.S. cities during the period in 1820 to 1860 and notes these were years in which an extensive system of canals and railroads was being established²⁸.

Jacob Metzer (1974) study indicates a narrowing of inter provincial price differences in wheat and rye in Russia after 1870 and attributes it to the nation's expanding railway system²⁹.

A few important studies also have been conducted on Indian context. According to **John Hurd** (2001), 'before railways, inter-regional rice differences were pronounced, and the local prices of grain, cotton, and other agricultural commodities fluctuated with the changes in local supply conditions, particularly rainfall. As the railway network expanded, and with it trade in commodities, price differences between regions narrowed dramatically³⁰.' According to his study on 188 districts in British India, the coefficient of variation remarkably dropped between the years 1865 to 1920. In 1865, when the coefficient of variation was over 40, in 1920 it moved on near about 20.

Michelle Mc Alpin (1974) documents a sharp convergence in Indian cotton prices during 1855 to 1912. However, she finds that there were no related changes in acreage devoted to either cotton or food grains, which one would expect if railways impacted relative prices³¹.

Another study on Bengal perspective was conducted by the **Mukul Mukharjee** (2001) for the same period. Mukharjee selected 13 districts of Bengal, and findings indicate that the coefficient of variation outstandingly reduced between years 1855 to 1912 according to 13 selected districts of Bengal. In 1855, the coefficient of variation was over 20 but after 1907, it settled on near about nine³².

Tahir Andrabi and **Michael Kuehlwein** (2009) applied different methodology to test the argument of the huge impact of railways on price convergence between the periods 1861 to 1920. The findings of Tahir Andrabi and Michael Kuehlwein are very interesting and something different from the earlier findings. They conclude that, 'the period 1861 to 1920 witnessed sharp price convergence in British Indian wheat and rice markets. Previous authors have suggested that since a vast railway system was built during that time, railways were probably the main cause of that convergence. However, tests examining price differences between individual districts provide surprisingly weak support for that hypothesis. Railways clearly mattered, but even after controlling for the effects on nearby districts; railways seem capable of explaining only about 20 percent of the decline in grain price dispersion in our sample period. The modest estimated effect fundamentally derives from the fact that prices were converging during this time almost as rapidly between districts without railways as with railways. Alternatively, controlling for time trends, the gap in prices between a given district pair was not much different before they got railways than after they got it'³³.

All the above-mentioned study is very important to find out the impact of the communication system to converge the price of a particular place or region. Mukharjee's (2001) analysis on Bengal perspective is very closer to our study. Yet, he did not select any particular district of North Bengal. However, we have to remember 'the case for such a role will vary from region to region – even from locality to locality – and will also vary depending on the time period examined'³⁴. Therefore, the study for the northern region of Bengal is essential.

VII. Development of Railways and Living Condition in North Bengal:

Agricultural Labour under Colonial, Semi-Capitalist and Capitalist Conditions: A Case Study of West Bengal³⁵ by **Biplab Dasgupta (1984)**, the paper is a very rich study on growth of agrarian labourers and their ethnic composition. The

paper begins as an account of the pre-British situation and then traces the growth of agricultural labourers under the colonial regime. It shows the growth corresponded to the economic policies of the British Government and how, by the 1920s, the land-man ratio turned against the labourers, which not only led to a worsening their condition but also brought about a change in their ethnic composition. The author then examines developments during the three decades of Congress government when the proportion of agricultural labourers among rural workers, reached new heights and the movement of agrarian labourers gathered momentum. Finally, the author examined the agenda of the Left Front government, along with an important analysis of the criticisms voiced against it.

The study is useful to understand the gradual decline of the economic condition of the agricultural labourers in Bengal. The paper obviously has traced on all Bengal perspective during pre and post-colonial period. The paper has a limitation in respect of the study of wage structure and purchase power of the agricultural labourer in North Bengal.

'Agrarian Changes and Agricultural Labourers in Cooch Behar' by **Bijoy Bihari Som (2005)**, the paper indicates the changing aspects in agricultural labour and in the agrarian structure of Cooch Behar district in West Bengal³⁶. Agrarian relation in Cooch Behar district was largely feudalistic in pre-independent India. However, with successive implementation of land reforms, and the growing commercialization of agriculture, a class of agricultural labour emerged. With the introduction of a three-tiered governance system, this group has since emerged as an important political class. The objective of the study is to examine such changing aspects in agricultural labour and in the agrarian structure of Cooch Behar district in West Bengal. Data has been collected from two villages selected from the Tufanganj subdivision of the district with the help of a suitably framed schedule during period 1996-97. Section one deals with agrarian structure and agricultural labour during the reign of the Koch rulers. Section two deals with the emergence of agrarian labour as a class during 1950 to 1977, and finally in Section three aspects of agricultural changes and agricultural labour from 1977 onwards.

Though the study discusses the agrarian structure of the colonial period, but the study has a limitation in respect of the study of the general condition of the agricultural labourer. The study mainly traces on post-colonial agrarian structure of Coochbehar district.

Virginius Xaxa (1985) critically discussed the factors behind the underdevelopment in North Bengal in his article, **Colonial Capitalism and Underdevelopment in North Bengal**. Instead of huge capitalist investment in the plantation industry, the economy of North Bengal remained underdeveloped. Here

the author tried to emphasize the socio-economic structure of the same region. According to author development and underdevelopment in North Bengal was therefore, far from being due to the supposed existence of a dual society with distinct systems of social and economic organization, but hinged around the dialectical relationship of the modern and traditional subsistence sectors whose exploitative nature produced these differences. This means that the modernity of the advanced sector is the function of the backwardness of the other. It is in this sense that development generates underdevelopment. This is done through a variety of mechanisms, which examined in the same article in the context of North Bengal. These structural consequences comprised in restricted and uneven development, which is a type of development characterized by extreme sectorial imbalance and an incapacity of the economy to gear its resources to the development of domestic market and the economic needs of the indigenous population. Such constructional underdevelopment was the result of the modalities of articulation between the modern plantation sector and the traditional subsistence-oriented sector. This article partially helps us to understand the factors behind the failure of the agriculture economy of North Bengal.

VIII. Railway's impact on the Forest Ecology of North Bengal:

Almost all the studies on forest and ecology stressing with the causes of deforestation and its impact in colonial India, few have touched upon the adverse impact of railways on forests. In Indian perspective, **M. Gadgil** and **R. Guha** both have done prominent work on ecological history of India³⁷. Studies by **Tucker** (1993) and others examine the impact of railways on forests as part of the wider phenomenon of deforestation under colonial rule, but they do not offer a detailed provincial analysis of the relation between deforestation and the railways in colonial India³⁸.

Neena Ambre Rao (2007) also discussed the colonial forest policy and its impact on colonial Maharashtra. The study indicates the increasing demand of the teak sleepers for the foundation of railway in Maharashtra, but the study is very superficial to examine the impact of the railway on the forest³⁹. Recent studies have stressed the need for an examination of micro-histories of the environment so that significant differences and similarities at the local, regional and national level can be exposed. So, there is a need to bring regionally specific patterns of environmental and political study to analyze the role of a colonial empire.

Pallavi V. Das (2012) investigates the process and patterns of environmental degradation at a regional level by taking the case of deforestation in colonial Punjab by studying its suggestion at the level of an empire. First, the paper analyses the

reasons for large-scale railway expansion in the Punjab by discussing spatial and temporal expansion. Secondly, the impact of the railway firewood demand on the Punjab's forests between 1860 and 1884 is examined, specifically, the conditions that facilitated the increased dependence of the railways on firewood. Next follows an examination of the temporally varying nature of deforestation, given that railway firewood demand was determined by railway line openings. This section also includes a discussion on the nature of the colonial state response to the deforestation crisis and its role in maintaining the fuel supply to the railways⁴⁰.

Swapan Kumar Rakshit (2003) has done a significant research work on "**Forest Resources: It's Problem and Prospects, a Study of Darjeeling and Jalpaiguri District, West Bengal**". The study is very close according to our selected research area. He has sincerely discussed the problem of deforestation and the economic prospect of the forest resources of North Bengal. However, the study was conducted on contemporary perspective⁴¹.

All most all the studies related with forest incite us to concentrate on the impact of railways on forest ecology of North Bengal.

IX. Impact on Demography and its Changing Feature:

Ranjit Das Gupta (1992) discussed the demographic pattern of the Jalpaiguri district 1872 to 1931. The study not only discusses the population growth rate, study as well mentions the population distribution according to various social groups or castes. However, the work does not make any relation with the communication development⁴². The quarry is essential how far the demographic pattern influenced by the communication development, mainly by the railways?

Swaraj Basu (2003) studied the impact of migration to the Coochbehar, Jalpaiguri and Dinajpur district between the years 1891 to 1921. The study significantly indicates the impact of migration on the demographic pattern and as well its shock on the natives like Rajbanshi's of North Bengal⁴³. The study does not trace on the role of communication to change the population distribution of North Bengal.

Sarah Hilaly (2007) described the impact of the railways on the demographic patterns of Assam. She also studied the immigration trend into the Brahmaputra Valley between the years 1881 to 1931 and its impact on the society. However, the study concentrates on the Brahmaputra Valley.

All most all the district gazetteers, settlement and administrative report of the districts of North Bengal highlight the population pattern and distribution.

However, the works do not concentrate on the impact of smooth communication on the demographic pattern of the northern region of Bengal.

X. Impact on Society and Culture:

There are series of studies conducted on the society and culture related with North Bengal. However, we don't get any specific study on communication and its impact on the society of North Bengal, but we have some good work on national and regional context.

Pradosh Chowdhury (2012) has drawn a good picture of the changing socio-cultural scenario after the foundation of railways. He not only discussed the social impact of railways, the study as well mentioned huge Bengali literature of that time, which helps us to understand the feeling of the general people towards the railways. The study significantly traces the impact of the railways on the society of Bengal and how the Bengal social structure effected after the introduction of railway⁴⁴.

Sarah Hilaly (2007) describes the process of introduction of railways and their social impact in Assam under colonial rule. Study mainly restricted within the Brahmaputra Valley and Surma Valley. It critically discusses the pattern of Urbanization and changing social scenario with the advent of railways. The study as well indicates the effect on the peasantry. She also studied the growth of economy that helped to the emergence of the non-native capitalist class and the growth of middle class due to development of railways.

Ian J. Kerr (2001) also realized the need of the study of the cultural and social consequences of the railways. Pilgrimage, a cultural practice of long-standing importance for most of South Asia's communities, was facilitated by railway transportation and the nature of the pilgrim's journey altered. India's sacred locations were made more accessible; the realization of sacred value made more possible for more people; the sacred geography of India was mastered and reduced to entries in the columns of railway timetables that came to determine the movements of many pilgrims. Later, potential pilgrims and/or tourists who might wish to visit sacred sites became the object of railway marketing campaigns by railway companies. The imperatives of capitalism working through the railway companies (and more recently bus companies) began to com-modify pilgrimage⁴⁵.

In this context, it can be stated that some scholar, both economics and social sciences have been trying to solve various problems those are related to the research area of North Bengal, but no one took a serious interest in my proposed research area, railways in North Bengal and its socio-economic Impact between 1870 to 1950.



This research gap irritated me with the inspiration to solve my selected problem. Naturally, there is a vast scope for study the introduction and impact of railways on regional perspectives. The scholars of different streams have pursued many useful writings on the railways. However, the canvases of most of this work are on all India or all Bengal.

2.4. Objectives of the Study:

In relation to our selected research problem and area, we have selected some precise objectives.

1. Find out the factors responsible for the foundation of railway in North Bengal. Here we also try to observe the interests of the colonial authority and the nature of the development of the railways in North Bengal.

(To achieve our proposed objective, we select the **Hypothesis: 1**, which has been tested mainly at the **Chapter No: 3.1**, partially at **Chapter No: 3.7** and **Chapter No: 3.8**)

2. Comparative study between railways and the traditional mode in respect of cost, capability and reliability is another significant assignment of our study. Here it is indispensable to study the nature of Colonial transport policy in respect to the development of railways and conventional mode.

(To achieve the proposed objective, we select the **Hypothesis: 2**, which has been tested at the **Chapter No: 3.2**)

3. Examine the acceptance of the railways as a carrier for the merchandise traffic. The trend of export-import trade in North Bengal is an important objective of our study that will indicate the comparative acceptance of the railways to the other conventional mode.

(To achieve the proposed objective, we select the **Hypothesis: 3** that has been tested at the **Chapter No: 3.3**)

4. Identify the role railways to accelerate the process of commercialization of the agriculture products of the northern Bengal is highly interrelated with our area and also an important objective of our study.

(To achieve the proposed objective, we select the **Hypothesis: 4**, that has been tested at the **Chapter No: 3.4**)

5. How did the commercialization of agriculture stimulate modern small scale agriculture-based industry in North Bengal? Here the study on the impact of plantation industry and growth of railway factories are also indispensable.

(To achieve the proposed objective, we select the **Hypothesis: 5**, that has been tested at the **Chapter No: 3.5**, partially at the **Chapter No.3.7**)

6. What was the impact of the railways on cottage industries of North Bengal? Identifying the role of railways in the process de-industrialization in North Bengal is also an important related objective.

(To achieve the proposed objective, we select the **Hypothesis: 6**, that has been tested at the **Chapter No: 3.5**)

7. Another important objective is to find out the role of the railway communication to reduce the price gap, and the price convergence between the districts of North Bengal.

(To achieve the proposed objective, we select the **Hypothesis: 7**, that has been tested at the **Chapter No: 3.6**)

8. Find out the role of railways to improve economic condition of the agricultural labour. The study will calculate the pre and post-railway development of the wage structure and purchase power of the common labourer in North Bengal.

(To achieve the proposed objective, we select the **Hypothesis: 8**, that has been tested at the **Chapter No: 3.7**)

9. How far the railway was responsible in the process of the deforestation of North Bengal? The study is very significant to identify the role of railway on the deforestation in respect of the economy and ecology of North Bengal.

(To achieve the proposed objective, we select the **Hypothesis: 9**, that has been tested at the **Chapter No: 3.8**)

10. However, the demographic pattern doesn't only depend on the communication system, but it is a unique feature behind the changing pattern of population distribution. But, how far the changing mode of communication or transformation of transportation from primitive to the modern system like Railway, took an essential role to change the

demographic pattern till the middle of 20th century? Here the impact of the railways on the convergence of population density is another prime objective of our study.

(To achieve the proposed objective, we select the **Hypothesis: 10** that has been tested at the **Chapter No: 3.9**)

11. Undoubtedly, railways introduced a revolutionary impact on the communication system due to smooth and rapid communication capability. We have decided to study the cultural change in the post railway period in North Bengal. Here the study of the impact railways on native society and culture is a very important purpose of our study.

(To achieve the proposed objective, we select the **Hypothesis: 11**, which has been tested at the **Chapter No: 3.10**)

2.5. Limitation of the Study:

We have already mentioned our research area. However, in order to analyze the economic impact of railways on the society of northern Bengal, we have restricted our study between the periods of 1870 to 1921. In the same field area, we have selected the comparative study of the transport cost, relative export-import study between conventional mode and railway, impact on industrial development, railways and its impact on forest economy, study on price gap and price convergence, impact on wage structure of the agricultural laborer and also the study of purchase power of a common agrarian labour. We don't study some other important scale to measure the material condition of the people like, cost and standard of living, per capita income, etc. According to our study area; we don't have much more scope of the study of any political movement and unrest those related with the socio-economic changes of the northern Bengal.

2.6. Hypotheses of the Study:

The hypothesis can be tested in a number of forms, which are: null, prediction, declarative and question form. In the context of our research problem, we have selected declarative form of Hypotheses. The declarative form generally states a relationship between the variables concerned. To achieve the objectives of our study, we have decided to test the following hypotheses:

Hypotheses 1:

The foundation and development of the railways in North Bengal conducted according to colonial commercial and political interest.

(The hypothesis has been tested basically at the **Chapter No: 3.1**, partially at **Chapter No: 3.7** and **Chapter No: 3.8**)

Hypotheses 2:

Railways had a revolutionary impact on the traditional communication system of North Bengal. Within few years, railways emerged as a superior carrier from any conventional mode in respect of cost, capability and reliability.

(This hypothesis has been tested at the **Chapter No: 3.2**)

Hypotheses 3:

Railways took a dominant role in the export-import merchandise traffic in North Bengal where the role of conventional mode was insignificant.

(The hypothesis has been tested at the **Chapter No: 3.3**)

Hypotheses 4:

Foundation of railways helped to expand the agricultural market. Agriculture production of North Bengal linked with the national and international market which helped to commercialize the agriculture products of North Bengal.

(The hypothesis has been tested at the **Chapter No: 3.4**)

Hypotheses 5:

The commercialization of agriculture had a positive impact on the development of small-scale agriculture-base modern industry in the North Bengal. Plantation industry was significantly traced by the colonial authority than any agriculture base industry.

(The hypothesis has been tested at the **Chapter No: 3.5**)

Hypotheses 6:

Expansion of the railway was highly responsible for accelerating the process of de-industrialization in North Bengal, which destroyed the handloom industry of North Bengal.

(The hypothesis has been tested at the **Chapter No: 3.5**)

Hypotheses 7:

Railway took a significant role to reduce the price gap and also took an important role to converge the price of essential commodities in North Bengal.

(The hypothesis has been tested at the **Chapter No: 3.6**)

Hypotheses 8:

Wage structure and purchase power of the common labourer significantly improved due to commercialization of agriculture with development of railways in North Bengal.

(The hypothesis has been tested at the **Chapter No: 3.7**)

Hypotheses 9:

The construction and development policy of the railways by the colonial authority was highly responsible for the huge deforestation in North Bengal.

(The hypothesis has been tested at the **Chapter No: 3.8**)

Hypotheses 10:

Smooth and rapid development of communication by the railways, reduced the population density gap between the police stations and administrative blocks of the districts of North Bengal, thus railways took a significant role to the convergence of the population distribution.

(The hypothesis has been tested at the **Chapter No: 3.9**)

Hypotheses 11:

The stagnant medieval social structure of North Bengal was highly affected by the foundation and development of railways with the entrance of modern education and influence of western and Bengali middle-class culture. Development of railway had a significant impact on the native society and culture.

(The hypothesis has been tested at the **Chapter No: 3.10**)

2.7. The Method of Study:

We have selected suitable methods of study to achieve our selected objectives. Therefore, we don't follow a particular method, and the method of study varied according to our specific objectives. We have applied essential method precisely to every single chapter to test our selected hypothesis.

- i. To achieve Objective: 1, we have selected the Chapter No: 3.1 and partially the Chapter No: 3.7 and Chapter No: 3.8 which also help us to attain our stipulated aim. Find out the factors responsible for the foundation of railways in North Bengal we have simply studied the government and official sources. We also try to observe the interests of the colonial authority and the nature of the development of the railways in North Bengal. To achieve this particular aim we apply comparative analysis, and compare the nature of development with the national context. Here we only discussed the method of the Chapter No: 3.1 and for the other mentioned chapters we discussed separately in below.
- ii. To achieve the Objective: 2, we have selected the Chapter No: 3.2. In this chapter, we applied comparative study between railways and the traditional mode in respect of cost, capability and reliability according to our selected sources. We have applied statistical and graphical analysis for the clear comparative study between railways and traditional modes. Here we have also simply studied the nature of Colonial transport policy on the basis of administrative reports and sources.
- iii. To achieve the Objective: 3, we have selected the Chapter No: 3.3. To examine the acceptance of the railways as a superior carrier, we have applied relative analysis of export-import trade between railways and waterways between North Bengal and other provinces of India and Bengal. We have applied comparative statistical and graphical analysis to clear the role of railways in the merchandise traffic.
- iv. To identify the role of railway to accelerate in the process of commercialization of the agriculture products of the northern Bengal, we have selected Chapter No. 3.4. We have studied the export trend of the important agriculture products of North Bengal according to reports of the rail and river-borne trade. We have simply applied statistical comparative analysis to calculate the role of railways to expand the market of the rice of North Bengal. We have also calculated the correlation between the price hike of common rice and wage hike of the agricultural labourer in the Dunajpur and Rangpur districts of North Bengal. We have applied comparative method of analysis to measure the role of railways to export the agriculture products of North Bengal, including tea. We have as well applied relative graphical analysis between the selected agriculture products.
- v. We have selected the Chapter No. 3.5 to study the role of railway to accelerate the process of industrialization and de-industrialization in North Bengal. We have studied how the commercialization of agriculture stimulated modern small-scale agriculture-based industry according to the registered list of

the factories of Bengal. We have also studied the development of the railway engineering and workshop factories in North Bengal. We have selected handloom industry to find out the nature of de-industrialization in North Bengal after the introduction and development of railways. We have simply studied the growth of the import quantity of the cotton piece goods of Indian and European in North Bengal. That indicates the role of railway to accelerate the market of European and Indian mill made cotton goods. At the same time, we have calculated the import trend of the cheap cotton twist and yarn which mainly used to make the handloom cloth. The import trend of the same product indicates the development and destruction of the handloom industry in North Bengal.

vi. Another important objective is to find out the role of the railway communication to reduce the price gap and the role of the railway to the price convergence between the districts of North Bengal. We have studied these objectives in the Chapter No. 3.6.

In order to calculate the hypotheses that the railway reduced the price difference between the districts of North Bengal, we select the years 1861 to 1921. We have selected two necessary products for common people; the rice, one of the main export products of North Bengal and salt, most essential import product of North Bengal. We have selected only five districts of the North Bengal (Rangpur, Dinajpur, Bogra, Rajshahi and Malda) and to compare with the Bengal. We select 21 districts of Bengal (Backergsnj, Noahkhali, Chittagong, Dacca, Maimensingh, 24-pargana, Midnapur, Calcutta, Hooghly, Jessore, Nadia, Jessore, Bankura, Bardwan, Birbhum, Murshidabad, Rangpur, Dinajpur, Bogra, Rajshahi and Malda). At first, we find out the Coefficient of Variation or CV (Standard Deviation divided by mean) of the common rice and salt in the selected districts of Bengal and North Bengal. The prices of the both products for every district are selected at the rate of the average annual price of common rice per mound. To calculate the comparative study on the price convergence of salt, we select the average price of salt in Bengal and North Bengal and apply same method like as rice.

We have also applied different methodology to test the impact of railways to reduce the price gap. We calculate the difference of the annual average price of Bengal and North Bengal for rice, and then find out the percentage of the price gap between North Bengal and Bengal.

In order to calculate the impact of railways to reduce the transport cost, we calculate the price gap of the salt between the Deltaic Bengal, the production region of salt and the North Bengal. We simply study the difference of price by

deduct the annual average price of one mound salt of North Bengal to Deltaic Bengal and subsequently, find out the percentage of the price gap.

- vii. We have selected Chapter No.3.7 to study the impact of railways on living condition of the common labourer. We have calculated the wage development in the districts of North Bengal to realize the difference between pre and post-railway wage rate. We have studied the wage rate to realize the economic condition of the marginal and majority population of the North Bengal. We have also applied the comparative analysis of the wage development between Bengal and selected district of North Bengal. The increase of wage rate may not indicate fruitful economic development due to high inflation of daily essentials. In order to judge the economic effect, we have decided to examine the purchase power or real wage of agriculture labour to test the hypothesis that the railways took a significant role to reduce the economic deprivation of the people of North Bengal. The maximum purchase power of a common agricultural labour is calculated by the maximum value of common rice in mound, in the districts of Rangpur and Dinajpur. The maximum monthly wage of agriculture labour in rupees is divided by the maximum value of one mound common rice in respective years. The findings are very essential to examine the pre, and post-railway purchase power variation.
- viii. We have selected the Chapter No.3.8 to study the role of railways in the process of the deforestation of North Bengal. The study is very significant to identify the role of railway on the deforestation in respect of the economy and ecology of North Bengal. We have studied the colonial forest policy and how far the policy was responsible for the deforestation. We have simply calculated the export-import trend of the wooden sleepers for the construction of railways. We have also studied the role of the railways to export the timber of North Bengal. The comparative analysis between railways and river-traffic is another important part of our discussion.
- ix. We have selected Chapter No.3.9 to study the role of Railway to change the demographic pattern of North Bengal. Here the impact of the railways on the convergence of population density is another prime objective of our study. To examine the argument, we have tested the variation in density (persons per square mile) of the 53 police stations or administrative divisions of the five selected districts of North Bengal according to the census report of the 1872 to 1951. We have calculated the pre and post railway CV of the population density according to the district. This indicates the role of the communication development to converge the density of North Bengal.
- x. We have selected the Chapter No.3.10 to study the impact of railways on the

society and culture of North Bengal. We have simply studied the major socio-cultural trends in the post railway period in North Bengal according to our selected sources. Here we have studied the impact of economic changes on the native society and culture of North Bengal.

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