Business, Management and Economics Engineering
ISSN: 2669-2481 / eISSN: 2669-249X
2022 Volume 20 Issue 2

ROLE OF HUMAN RESOURCE AND HIGH-SPEED RAILWAY ANALYSIS IN INDIAN RAILWAYS

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Abstract

Indian Railway is lifeline of India which is largest employer in India. For improving speed, India needs to increase speed of railway for fast transportation of goods and passengers. For introduction of HSR in India, need to have also skilled and efficient Human Resource which is baseline for any successful organization. But this aspect is being ignored on larger front. Indian Railway carried 8.06 billion passenger (23 million passenger daily travel) and 1.21 billion tons (1232.64 million Tons) of freight during financial year (FY-2020). There are 293077 freight wagons, 76608 passenger coaches, 12729 locomotives with 12.54 lakh staff. In this study, comparative study of HR strength, staff expenditure, Operating Ratio, Capital Investment, and other factors have studied. After that, its analysis has done. Average speed will increase to 160-200km for developing High Speed Railway (HSR) under the National High Speed Rail Corporation Limited (NHSRCL). It is concluded that through best HR and technology, Indian Railway can improve efficiency not only in HSR but also in Indian Railway. Best practices can be identified in various areas. Indian Railway must focus on best practices across the world with modification and its implementation.

Keywords: *Human Resource Management, High Speed Railway, Indian Economy,*

2. INTRODUCTION

For development of any nation, need to have best transportation for speedy economic growth and generating employment opportunities. Last study done in 2008, it is found that increase in output of railway by Rs 1 would increase output in the economy by Rs 3.3. Also, same way, an Rs 1 push in railway sector will increase the output of the other sector by about Rs 2.5 which has cascading effect on another sector like manufacturing/service/etc.

Today Indian Railway is 4th largest railway with 67956 km track in the world where it is highest in the USA (224792 km), China (150000 km) and Russia (128000 km). Among top10 railways, 8 are nationalized except USA and Canada.

Today China has developed railway track from 49000 KM in 1949 to 150000 km in 2021 whereas India developed track from 53000km in 1947 to 69000km in 2021. China has grown 40000 km High Speed Railway which is highest in the World.

The Indian railways is the largest commercial enterprise of the public sector in the world. Indian railway is known for land asset which own around 4.55 lakh hectare land throughout country. This credit goes to rigorous planning in pre independence period.

Many times, Indian Railways used to be said that IR is overstaffed. But in reality, there are 2597 doctors with 54000+ paramedical staff with 57560 RPF working along with IR. This is truth that IR is overburdened with expenditure on HR especially after 6th pay commission. In this area, we can streamline the staff ratio with higher productivity. At present, we are spending today around Rs 1,54,000 Cr on staff and pension out of revenue of Rs 1,74000 Cr in 2020.

During Union Budget 2021-22, government allotted Rs 1800Cr (249Million) for gauge conversion, Rs 3000Cr (US$414 Million) for doubling work, Rs 6815 Cr (US$941 Million) for rolling stock and Rs 2448 Cr (US$338Million) for signaling and telecom, railways colonies, etc. Now Indian Railway operate 13169 passenger and 8479 Goods Trains over 123542 KM of total tracks over a 67956 km route.

Various research works have been conducted on this for different aspects such as on management of Indian Railway, Human Resources Management, employment relations, etc. **(Pereira, et.al 2014-2016).** This study adds to the body of knowledge by identifying the various stakeholders and connecting High Performance Work Practices (HPWP) to various performance metrics in both Chinese and Indian railroads. There have been many efforts to explain the connection between firm performance and human resource strategies **(Legge, 1995; Boxall& Purcell; 2003).**

Public sectors are mostly overlooked in human resource management research, which is primarily conducted in the private sector. However, the public sector offers a unique framework for decision-making that is primarily impacted by the needs of numerous stakeholders, including the expectations of the federal and state governments, lawmakers, residents, and service users **(Perry and Porter, 1982; Rainey, 2009).** The decision on human resource strength and expenditure is also influenced by various groups of trade unions, employees or managers like merging of cadres, reducing staff, mechanization of work, etc. The digitization of HR, investment in technology and mechanization have direct impact on the strength of staff strength and its efficiency.

Indian railway is the biggest organization of India who have 4.55 lakh hectares land, carries trains with 12520 locomotives (engines), having 7525 stations, run trains with 76452 coaching stocks, 293077 wagons.

The overall Operating Ratio of the Indian Railways has to be considered as it is influenced by the HRM practices. Higher the expenditure on HR, more will be the operating ratio incurred by the Indian Railways. Thus, planned personnel efficiency needs to be encouraged in this public sector unit to curb down the increasing cost ratio. This can be maintained even with the help of technological support that leads to better practices and overall reduction of operational ratio. In short, need to reduce expenditure on HR and improve efficiency through best practices as adopted in other worldwide railways.

Operating ratio 98.4 means Rs 98.4 is spent to earn Rs 100/-. From this, we can understand that there is need to improve efficiency by raising operating ratio. From above, it is easily understood that Indian Railway is a staff-oriented organization which is running on the principle of social welfare as well as commercial principle. Still, railways need to increase earnings, otherwise, it would be difficult to sustain in the era of growing competition by other sectors of transport.

3. REVIEW OF LITERATURE

Review of literature focuses on various aspects of Indian Railways, particularly highlighting the personnel efficiency in terms of planning the human resources in a technological efficient way. The reviews focus on steps undertaken by railways in other developed countries to increase their HRM practices. Human resource helps an organization not only use its fixed and limited resources more effectively and efficiently, but also reach its goals more quickly.

a) **Kyoung-Suk Choi, (2021)** China has been enhancing the functioning of its China Railway Express system, which connects China and Europe, as part of the Belt and Road Initiative. The CRE is now seen as a crucial indicator of how well BRI objectives are progressing and has the potential to emerge as the most environmentally friendly method of long-distance transportation. The Chinese government's active involvement has allowed the system to expand quickly. CRE will be more crucial as a third alternative to complement air and sea transport as the Eurasian trade and logistics environment evolves, and shippers' demand for CRE service will keep growing. Few academic studies have been conducted on the relevant CRE policies and status, notably in foreign academic publications, despite the CRE system's rising function and potential relevance. As a result, this research thoroughly examined the current state of the CRE system's functioning by route and area and highlighted particular issues that must be resolved to maintain the system's sustainable growth.

b) **JIN Jing, (2021)** has presented Design of China Railway Going Global Scheme, and current system of world high-speed railway market with induction method, by quantifying planned railway length in various regions, dividing international high-speed railway projects into four sub-systems, namely strategic railway projects, demonstration railway projects, assistance railway projects, and commercial railway projects, enumerating their characteristics, and proposing schemes for participating in international high-speed railway projects.

c) **Yoshitsugu Hayashi, Werner Rothengatter, and KE Seetha Ram (2021)** have included in-depth analyses and insights into the main areas of HSR development, based on examples from across the world and prior knowledge in their book. Their goals are to assess the present level of knowledge on HSR for policymaking, improve it, and broaden its horizons for future projects. The six sections of Frontiers in High-Speed Rail Development provide readers with thought-provoking concepts and fresh viewpoints that will expand their understanding of HSR design and development.

d) **Xuemei Zhou, Xiaodan Lin, Xiangfeng Ji and Jiahui Liang (2021)** High-speed trains are included as a highly integrated system of science and technology that has been absorbed in the sphere of transportation. They not only satisfy people's desires for environmentally

friendly travel but also support the growth of connected sectors. In order to measure the economic impact of high-speed railway construction investment for different industries, an input-output model has been developed and applied, taking into account the differences in each stage and primarily basing itself on the input-output table for 149 sectors from the Chinese economy taken from the year 2017. The three high-speed railway hub cities of Zhengzhou, Xi'an, and Wuhan in China have been chosen as the specimens for the application of this model, and the shift-share spatial structure model has also been taken into account to quantitatively analyze the effect of the high-speed railway operation on related industries.

e) **Yoshitsugu Hayashi, KE Seetha Ram, and Shreyas Bharule (2020)** They demonstrate Institutional Development for the Successful Operation and Management of High-Speed Rail as well as the Frontiers of Modeling the Spillover Effects of High-Speed Rail for Quality of Life.

f) **Chen, et. al (2015) E**xamined railway systems in China, Germany, Spain, United States Of America, Russia, Japan where he tried to compare best practices among different countries which led them to introduce the best railway transportation system in their country. They are very beautifully compared and done.

g) **Lawrence, et.al. (2019)** In this, they tried to show how China did a great job in Bullet Train development with the help of technology and human resource management. In very systematic manner, they tried to show step by step development in China.

h) **K Aswathappa (2014)** in Human Resource Management Book given best technical modules like Performance Management Methods and other management practices with case studies.

i) **World Development Report (2019) on The Changing Nature Of Work.** This is specially focused on how work in the world of human resource is getting fast changed.. In this respect, Artificial Intelligence, People Analytics are being focused which need to be adopted for better Human Resource practices. But ultimately it is impacting the number of staff employability.

j) **Kasinath, Sopan (2011)** has examined the HRM of Indian railways. The study period was from 1950–1951 through 2008–2009, and the researcher used secondary sources from the Indian Railway to gather data. The statistical techniques were employed in accordance with the needs of the research objective. Based on his study's results, the researcher suggested that IR should build more stations since socioeconomic growth is mostly correlated with the number of railroad stations. Electric engines are the most affordable and environmentally beneficial forms of transportation; hence their number should be expanded in order to provide better passenger service and better carriers in IR.

k) **Daniel Daneci-Patrau (2011),** is analyzing the efficiency of HRM in railway transport. It is a system of indicators which is aimed for provisioning with human resources that is concerned with the employee’s qualification, structure or personnel mobility, working time. The researcher revealed that the HR is not used efficiently as there is no proper correlation between the qualification degree of workers and the complexity degree of the executed

works and amount of remuneration paid to them, some with less qualified has given the job of overqualified, and some with good qualification has given job of less than their qualified work.

l) **KeldLaursen (2013),** Examines HRM practices and innovation. This study consists of surveys, literature reviews and discussion of critical areas. The study discusses the role of the Human Resource manager for bringing the innovative outcomes from their activities. They explored how various practices influence innovation and how the concentration of certain practices is important for it, while highlighting the idea of complementarities between practices.

m) **Nathanail (2008)** Has tried to show the various frameworks that would assist the railway organization for monitoring and controlling their service quality that is to be provided to their passengers. For this the author has estimated the 22 indicators that were grouped under 6 different criteria, that was safety systems, accuracy itinerary, passengers' comfort, cleanliness, passenger information and servicing.

n) **Yu (2008)** Tried to measure the technical efficiency of the world Railways. The author also measured railway service efficiency and effectiveness, also technical effectiveness. For this the researcher has studied the 20 selected railway networks all over the world by network data envelopment analysis (DEA). The result was concluded such that the organization which has technical efficiency as well as service efficiency were able to reduce the cost of improved and also attracted maximum passenger, so this brings the firm success.

o) **Goverde, et.al. (2016)** The author in this research paper states that the quality of the rail timetable decides the performance and effectiveness of railway network operation. But in a country like India where a huge population is traveling from the railway, it is very challenging to prepare a quality timetable which is stable and energy efficient. The authors in this research paper with an objective to improve the timetable performance, have proposed an integrated timetable construction and evaluation at 3 levels. First on Microscopic level which is based on the accuracy of the running time of the train, it's blocking time which is calculated by using the train dynamics, signaling logic and infrastructure. For this level it is required for evaluation of feasibility, infrastructure occupation and stability.

p) **Decramer et.al (2013)** The performance of the public sector organization is being evaluated by the various stakeholders. Its performance indicator as well as its efficiency in the service has been always seen. The Indian Railways is the world largest commercial Public Sector Organization where their stakeholders see their financial performance, meaning the profitability also along with this organization has a big impact on the Indian citizen, therefore the way of service quality is also assessed.

4. STATEMENT OF PROBLEM

The Operating ratio remained very high during this decade 2010-20. It has been 98 percent in the year 2020 means to earn 100-rupee, IR spending 98 rupee. This specially happening due to heavy expenditure on staff cost. Due to heavy size of the manpower, Indian Railways spending

around 56% of earnings goes to staff costs and around 16% goes to the payment of pensioners. Means total 72%.

On the other hand, due to low speed and service, passenger and goods volume is gone on reducing and that traffic going to road and air sector. This is also due to low investment on high-speed railways and technology which is paramount for the growth of Indian Railway. Overall, this paper is being focused on the improving efficiency of HR and implementing High Speed Railway (HSR).

5. OBJECTIVES OF THE STUDY

Main objective of this paper to study the reasons of high cost of staff and low speed of the railways. Now we can improve speed of the railway and reduce the cost of staff with adoption of best practices from other nations and by doing comparative study of other nations and specially with Chinese Railways. This will be done with suitable recommendations for efficient management of Human Resource. Also, will try to explain why there is need to invest in High-Speed Railway infrastructure for better compatibility of railway with road and air transportation. Also, try to explain why this investment is must for the growth of Indian Economy.

6. RESEARCH METHODOLOGY

For this study, secondary data of Human Resource strength and its expenditure, Operating Ratio, route track length and High-Speed Railway length has been collected. Statistical Analysis and Comparative analysis of the data has been done. All the information has been placed in bar diagram, Histogram, and graphical manner.

All the data is secondary data, which is taken from the Ministry of Railway, Annual Reports of Indian Railways, various committee reports like Bibek Debroy committee, Anil Kakodkar committee, World Bank, International Railway Union, Economic Survey, RBI reports and Central Secretariat Organization. The period of study is from 2011-12 to 2019-20.

Limitation of the study

Study of Indian Railway in terms operating ratio, staff strength, expenditure, infrastructure creation, development of high-speed railway is completely different from Chinese Railway. As execution of project, measurement of efficiency of staff, financial efficiency is different. Focus is on the comparative study

7. DATA ANALYSIS AND INTERPRETATION-

Indian Railway measures efficiency in terms of Operating Ratio (OR). By focusing on Operating Ratio (OR) only, we cannot understand comprehensive expenditure on new assets, infrastructure development, technological investment and depreciation. Also, it does not look in the depreciation of asset, maintenance cost of assets.

Whereas in this paper, for measuring efficiency, we are going to analyze five parameters and will do comparative study like Operating Ratio, Revenue generation, passenger and traffic volume and earning, staff strength and expenditure and investment on High-Speed Railways.

i. Operating Ratio (OR) of Indian Railway

Normally, Operating Ratio (OR) used as single parameter to understand performance of Indian Railway. Under this, how much rupees are invested for earning 100 rupees calculated by considering all earnings and expenditure in consolidated manner. Since 1951, the fiscal year 2017-2018 was the worst year for the Indian Railways performance where the operating ratio was 98.4 percent meaning the Indian Railways spending 98.4 paisa and earning Rs 1. That means a very small amount of surplus remained. It is good to have a low operating ratio because a low operating ratio means a high amount available for investment on infrastructure development. But in the case of Indian Railway, it was the opposite; the operating ratio was high, which means the low amount available for growth and expansion of the Indian Railways.

Early in the 1950 to 1970 the Indian Railway was having a good operating ratio. It was 81 percent in the fiscal year 1950 to 1951, which became better at 78.75 percent till the year 1960 to 1961. But from 1970-71 the operating ratio started rising and reached 84.13 percent. But still the Indian Railways managed well. Further in the fiscal year 1980-1981 it was 96.07 percent which got reduced to 91.97 percent in the fiscal year 1990-91 and further in the fiscal year 1995-96 and 1996-97 it was 82.45 percent and 86.25 percent respectively. But again, from fiscal year 1997-1998 it went to the worst position of 90.9 percent and in 1999-2000 it was 93.3 percent which again went worst till 98.3 percent in the year 2000-2001.

But further from Fiscal year 2001-2002 to 2007-2008, the Indian Railways showed improvement for back-to-back 6 years. It saw operating ratio of 96.6 percent (Fiscal Year 2002), 92.34 percent (Fiscal Year 2003), 92.3 percent (Fiscal Year 2004), 90.98 percent (Fiscal Year 2005), 83.7 percent (Fiscal Year 2006), 78.68 percent (Fiscal Year 2007) and 75.94 percent (2008). In Fiscal Year 2009 the ratio again worsened to 90.46 percent.

From Fiscal Year 2010 till current, the best operating ratio was 90.2 percent in Fiscal Year 2013. The year-wise operating ratio during the said period was 95.3 percent (Fiscal Year 10), 94.6 percent (Fiscal Year 2011), 94.9 percent (Fiscal Year 2012), 90.02 percent (Fiscal Year 2013), 93.6 (Fiscal Year 2014), 91.25 percent (Fiscal Year 2015), 90.48 percent (Fiscal Year 2016).

Table 1: Operating Ratio of Indian Railways from 1950-51 to 2019-20

Years	Operating Ratio in percentage
1950-1951	81
1960-1961	79
1970-1971	84
1980-1981	96
1990-1991	92

2000-2001	98
2008-2009	90
2009-2010	95
2010-2011	94
2011-2012	94
2012-2013	90
2013-2014	93
2014-2015	91
2015-2016	90
2016-2017	92
2017-2018	98
2018-2019	96
2019-2020	97

The operating ratio reached 96.5% in 2016–17 as opposed to 90.48% in 2015–16, indicating the significant rise. Operating costs and pension payments have increased significantly over the last several years, according to the government's Medium Term Fiscal Policy Cum Fiscal Policy Strategy Statement 2019–20.

Due to the national economy's expansion impacting rail traffic, the operating ratio in 2008–09 was 75.9%. The operating expenditures, meanwhile, have risen since the 6th and 7th Central Pay Commissions went into effect. Additionally, the profits growth's velocity has slowed. As a consequence, during the last several years, the operating ratio has been continuously increasing. It's important to note that a significant portion of operating expenditures relate to salaries.

The operating ratio for the Indian Railways reached 96.5% (FISCAL YEAR 2017) and 98.4% (FISCAL YEAR 2018) in the previous two years, which is very poor. It was planned

for the Railways' operating ratio to increase from 98.4% in 2017–18 to 96.24% in 2018–19 and to 95% in 2019–20.

ii. Staff Strength and expenditure on Staff and Pension

Human Resource is vital part of any organization specially in Indian Railway. It is due to around 70% of revenue is getting spend on staff and pension purpose. It is mainly increased after implementation of 6th Pay Commission.

From this, we can understand that how much Human Resource Management indispensable for improving financial condition of organization and efficiency too.

Table 2: Expenditure on Indian Railway Staff from 1950-51 to 2019-20

Number of staff as on 31st March 2020(In Thousand)					**Expenditure @ on Staff (Rs in Crore)**
Years	**Groups-A & B**	**Group-C**	**Group-D**	**Total**	
1950-51	2.3	223.5	687.8	913.6	113.8
1960-61	4.4	463.1	689.5	1157.0	205.2
1970-71	8.1	583.2	782.9	1374.2	459.2
1980-81	11.2	721.1	839.9	1572.2	1319.7
1990-91	14.3	891.4	746.1	1651.8	5166.3
2000-01	14.8	900.3	630.2	1545.3	18841.4
2010-11	16.9	1079.2	235.9	1332.0	51776.6
2017-18	16.6	1133.5	120.9	1270.4	128714.74
2018-19	*16.8	1075.8	135.1	*1227.7	*135171.13
2019-20	**18.5**	**1235.1**	#	**1253.6**	**154214.71**

Table 3: The average annual wage (excluding fringe benefits) per employee paid under various categories in 2019-20

Category	Groups-A & B	Groups-C	Total
Workshop & Artisan	-	1429594	1429594
Running	-	1693671	1693671
Others	-	1081976	1081976
Total	**3415481**	**1199500**	**1230641**

The figures were turned down because of use expenses on salaries of workers in Indian Railway. The revision made in the pay commission has given rise for salary expenses. Further the pension bill is also expected to rise that will surely affect the expenses of Indian railway in the upcoming years.

Table 4: Human Resource Cost in Indian Railways

Years	Gross Revenue Per Employee in Rs	Human Resource Cost per Employee in Rs	Value Added in Rs
1950-1951	2882	1246	1636
1960-1961	3979	1774	2205
1970-1971	7327	3347	3980
1980-1981	17195	8375	8820
1990-1991	75381	31276	44105
2000-2001	233035	121924	11111
2008-2009	589170	288167	301003
2009-2010	6384.55	3797.03	2587.52
2010-2011	7117.57	4043.59	3073.99

Compared to Chinese Railway, strength of staff is very low when large route of 150000 km is managed including 40000km High Speed Railway (HSR). They have different management of

cadre for various functions. In following tables, explained the length of track, staff strength, staff expenditure and High-Speed Railway length.

Table 5: Total employees of China Railways (000)

Year	China
2008	1732
2009	1850
2010	1756
2011	1761
2012	1793
2013	1796
2014	1902
2015	1874
2016	1874
2017	1848
2018	1833
2019	1915

Source: Computer and Enterprise Investigations Conference

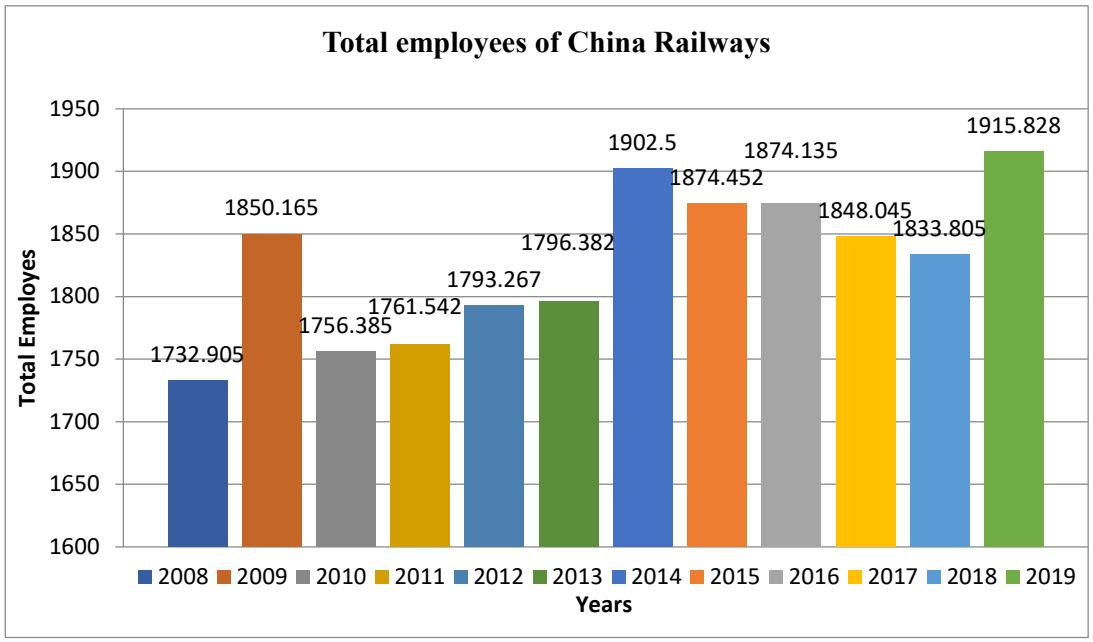

Figure 1: Employee strength of Chinese Railway

Source: Computer and Enterprise Investigations Conference. (CEIC), Hong Kong

iii. Comparison of Railway Length and Staff Size in selected countries

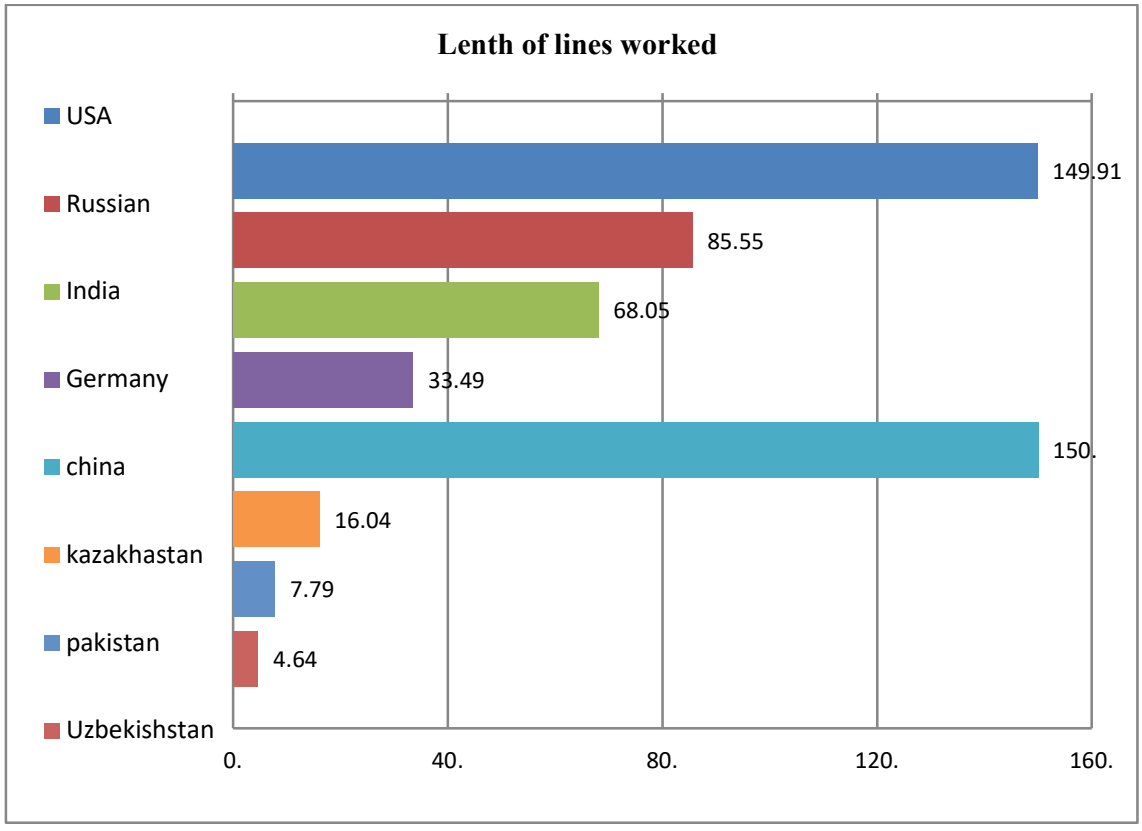

Figure 2: Length of Railway Lines worked

iv. Revenue generation in India and China

This is very easy to understand the growth of any railway through their revenue. Following is table where revenue of both countries given. From below data, it can be observed that revenue of Chinese railway is high. For understanding, it given in Billion Dollar.

Table 6: Revenue of India and China in Billions Dollar

Year	India (in Billion Dollar)	China (in Billion Dollar)
2011	12.70	68.01
2012	13.60	71.61
2013	15.18	85.94
2014	18.81	90.77
2015	21.50	92.27
2016	22.85	97.33
2017	22.17	105.93
2018	23.52	113.87
2019	24.86	130.86
2020	23.52	149.91
2021	24,86	150,40

Source: Statista Database Company, Germany

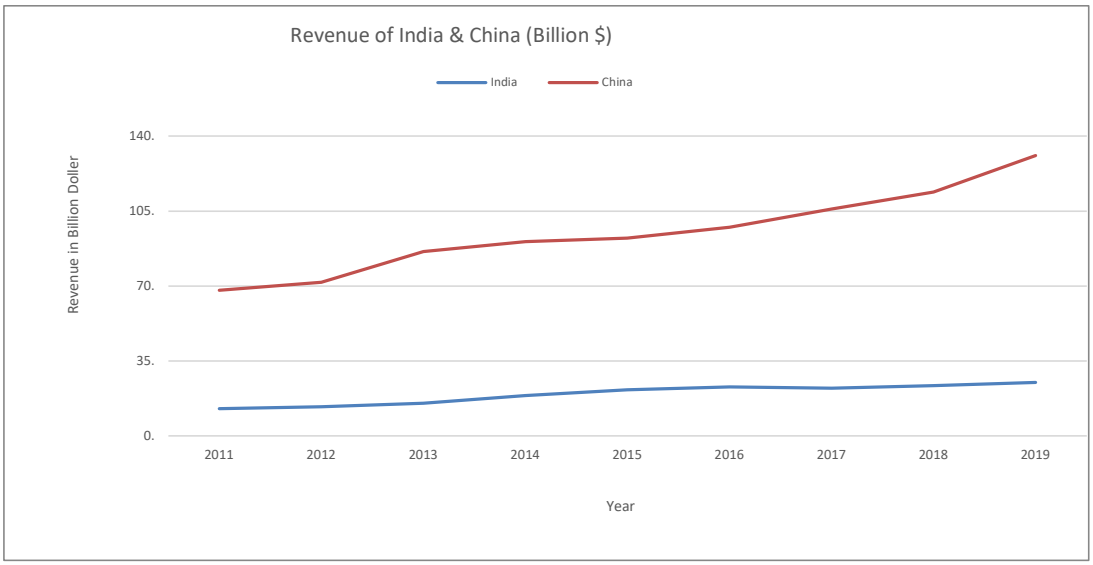

Figure 3: Revenue of India and China in Billions Dollar

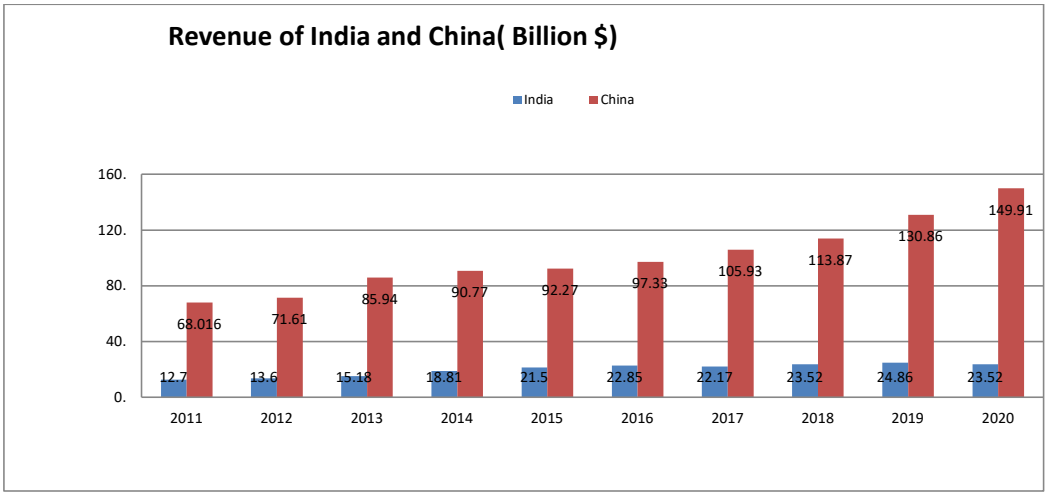

Figure 4: Revenue of India and China

Source: Statista Database Company, German

In respect of India, revenue generation for railway appears to be very slow compared to China. It may be due to excessive investment made by China for creation of new tracks as well as fast spread of new tracks in other countries under Belt and Road Initiative in around 27 countries along with Europe.

Table 7: Passenger Traffic Ratio in Railway across India & China

Year	India	China
2010	7.24	1.68
2011	7.65	1.86
2012	8.22	1.89
2013	8.42	2.11
2014	8.39	2.30
2015	8.22	2.53
2016	8.01	2.81
2017	8.22	3.08
2018	8.29	3.38
2019	8.44	3.66

Source: Statista Database Company, Germany

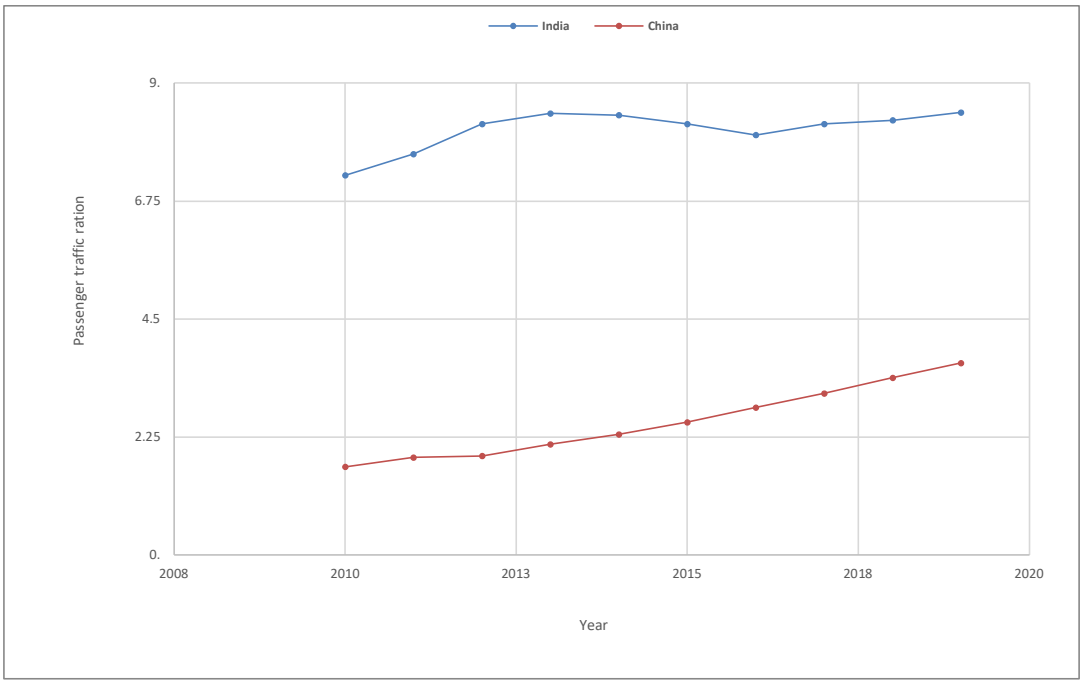

Figure 5: Passenger Traffic ratio in railway across India & China (2009-2019)

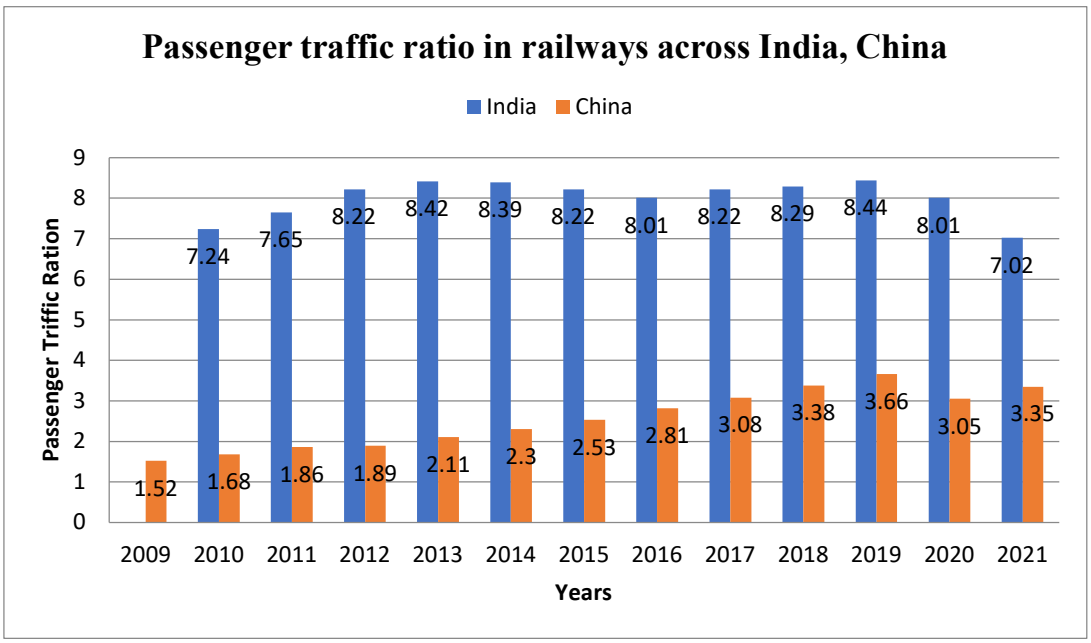

Figure 6: Passenger Traffic ratio in railway across India & China (2009-2021)

Source: Statista Database Company, German

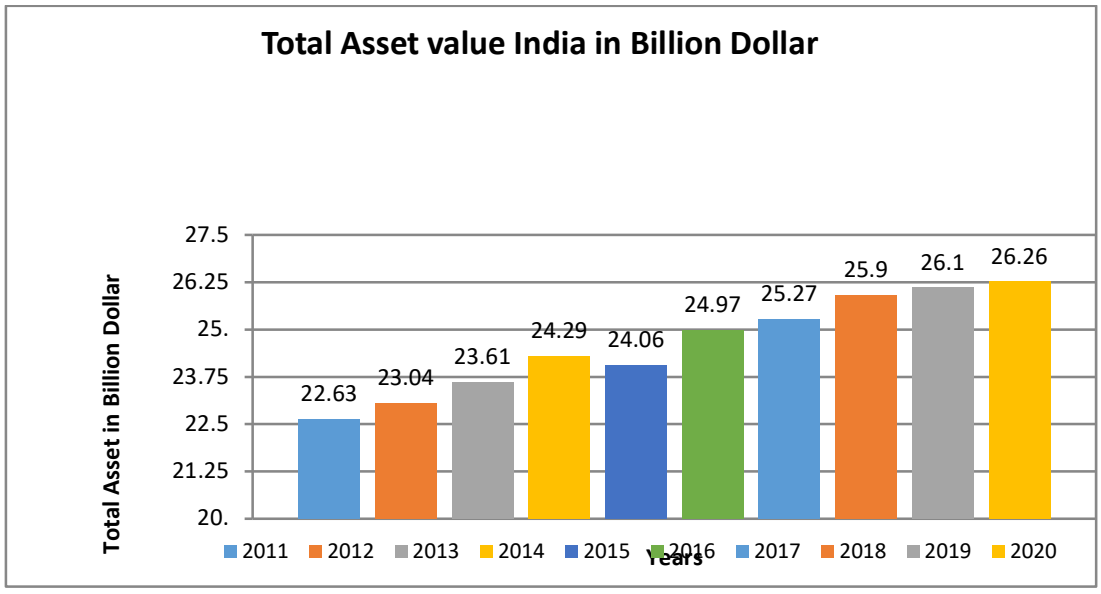

Figure 7: Total asset value of the India and China Railway from 2009 to 2020 (India)

Source: Statista Database Company, German

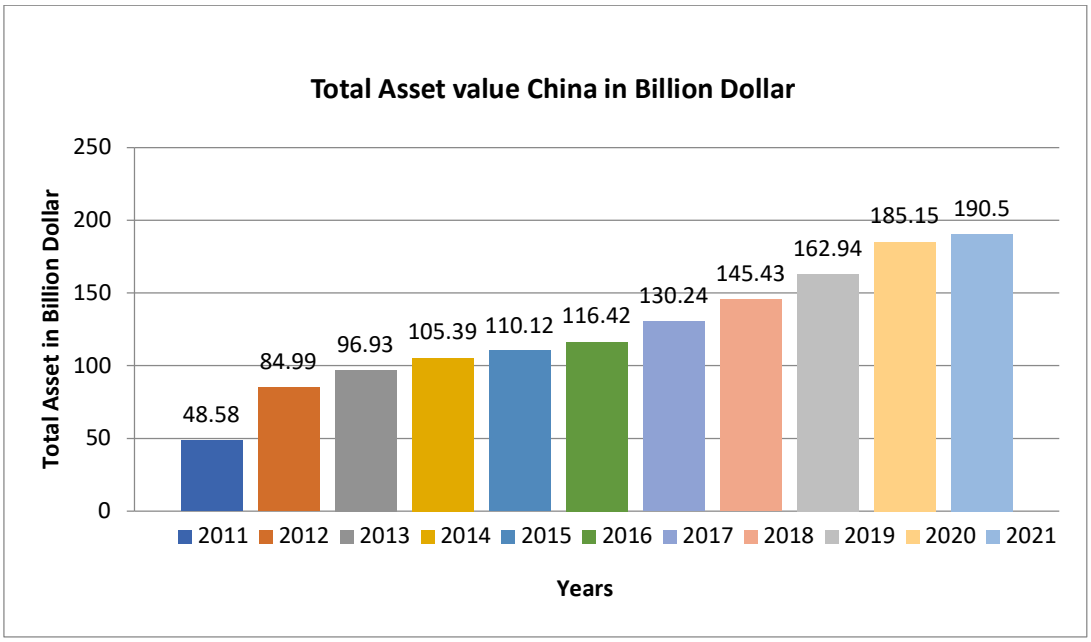

Figure 8: Total asset value of the India and China Railway from 2009 to 2020 (China)

Source: Statista Database Company, Germany

Table 8: Total Asset value India in Billion Dollar

Year	China (In billion dollar)	India (In billion Dollar)
2011	48.58	22.63
2012	84.99	23.04
2013	96.93	23.61
2014	105.39	24.29
2015	110.12	24.60
2016	116.42	24.97
2017	130.24	25.27
2018	145.43	25.90
2019	162.94	26.10
2020	185.15	26.26

Source: Statista Database Company, Germany

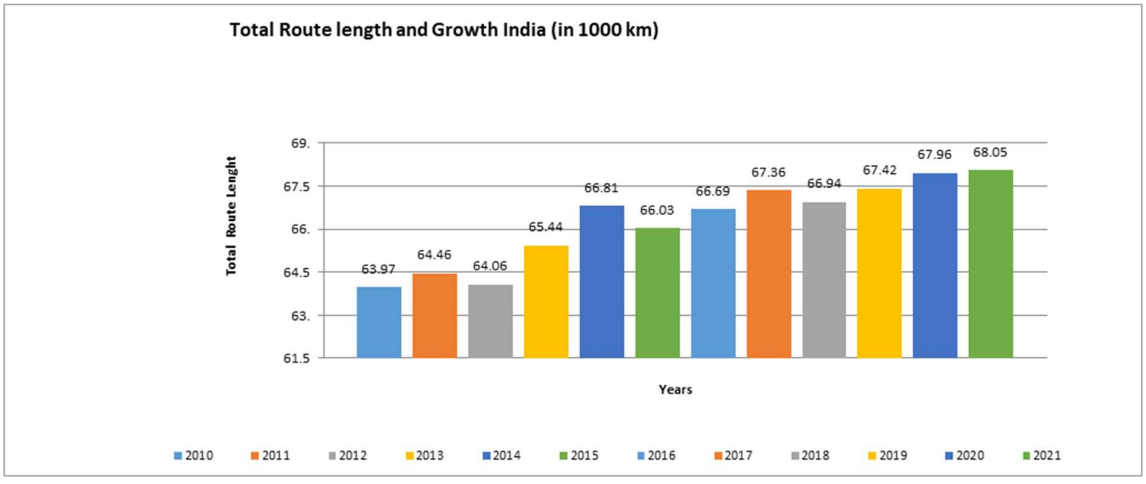

Figure 9: Total Route length and Growth of railways across (India)

Source: Statista Database Company, Germany

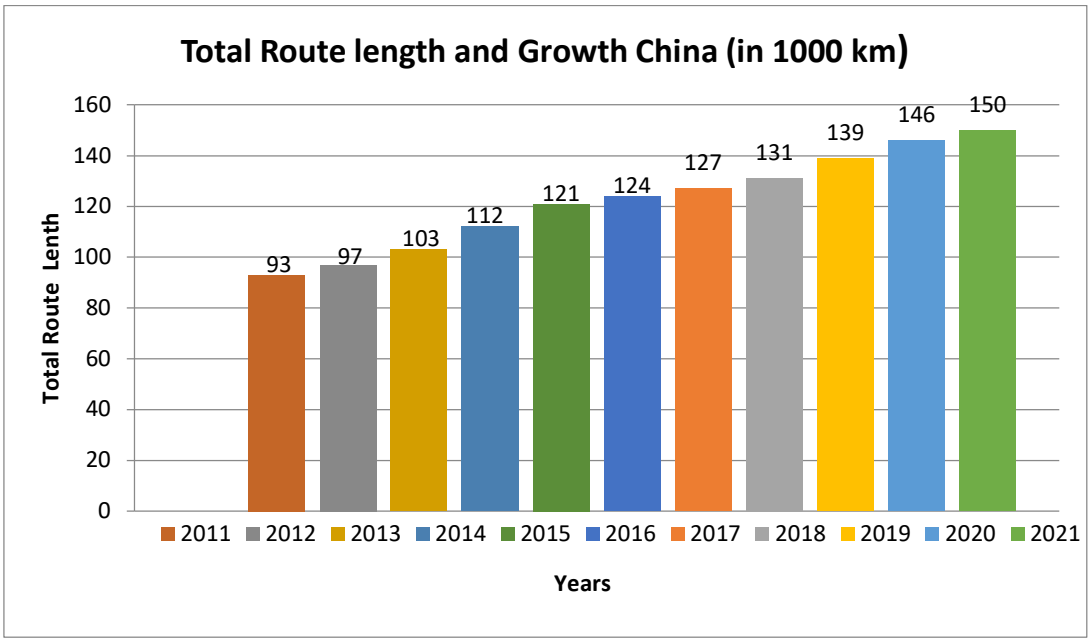

Figure 10: Total Route length and Growth of railways across (China)

Source: Statista Database Company, Germany

Table 9: Total Route length and Growth of railways across India and China

Year	India	China
2011	64	93300
2012	64	97600
2013	65	103000
2014	65	112000
2015	66	121000
2016	66	124000
2017	67	127000
2018	66	131000

2019	67	139000
2020	67	146000
2021	68	150000

Source: Statista Database Company, German

Table 10: Rail track length and Growth

Year	Km	±% p. a.
1949	21,800	
1955	25,600	+2.71%
1960	33,900	+5.78%
1965	36,400	+1.43%
1970	41,000	+2.41%
1975	46,000	+2.33%
1985	55,000	+0.63%
1990	57,800	+1.00%
1995	62,400	+1.54%
2000	68,700	+1.94%
2005	75,400	+1.88%
2010	90,504	+3.72%
2011	93,300	+3.09%

2012	97,600	+4.61%
2013	103,000	+5.53%
2014	112,000	+8.74%
2015	121,000	+8.04%
2016	124,000	+2.48%
2017	127,000	+2.42%
2018	131,000	+3.15%
2019	139,000	+6.11%
2020	146,000	+5.04%
2021	150000	+2.74%

Source: Wikipedia

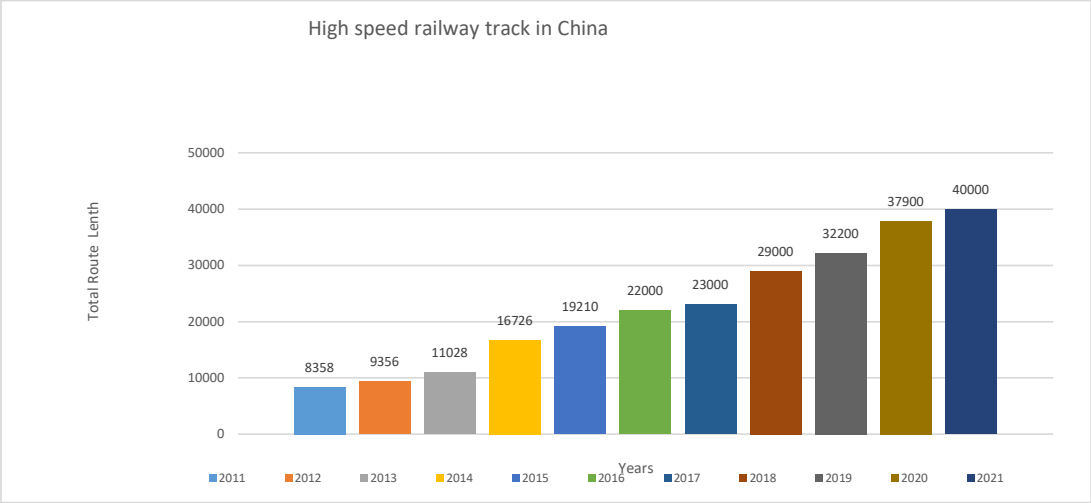

Figure 11: High speed railway track in China

Source: Statista Database Company, Germany

Table 11: High speed railway track in China

Year	**Km**	**±% p . a .**
2011	8358	+62.32%
2012	9356	+11.94%
2013	11028	+17.87%
2014	16726	+51.67%
2015	19210	+14.85%
2016	22000	+14.52%
2017	23000	+4.55%
2018	29000	+26.09%
2019	32200	+11.03%
2020	37900	+17.70%
2021	40000	+5.54%

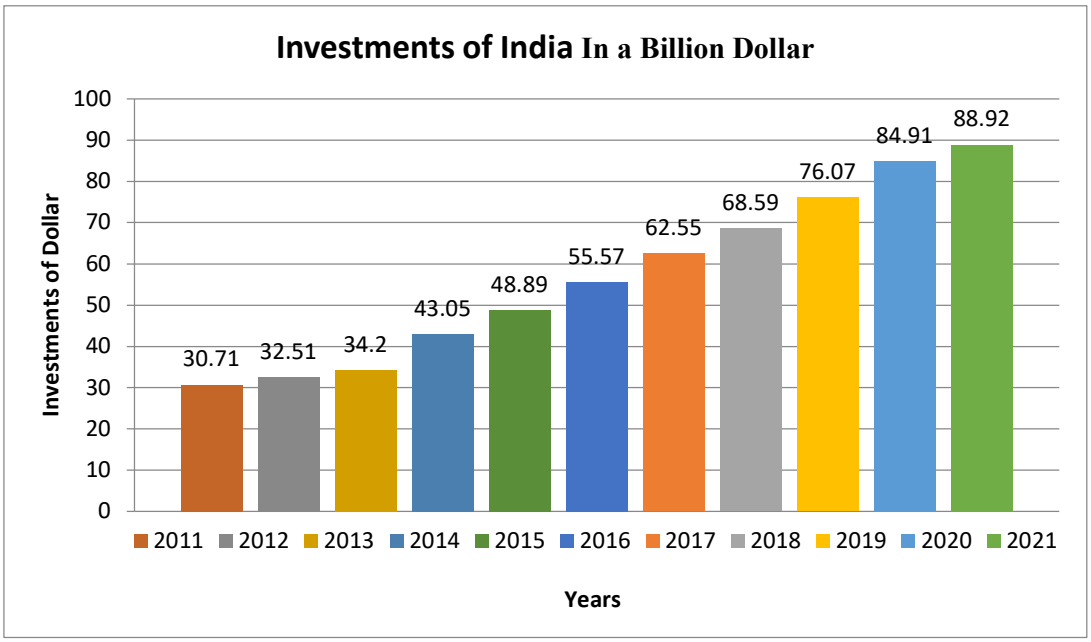

Figure 12: Total Investment of India from 2011-2020

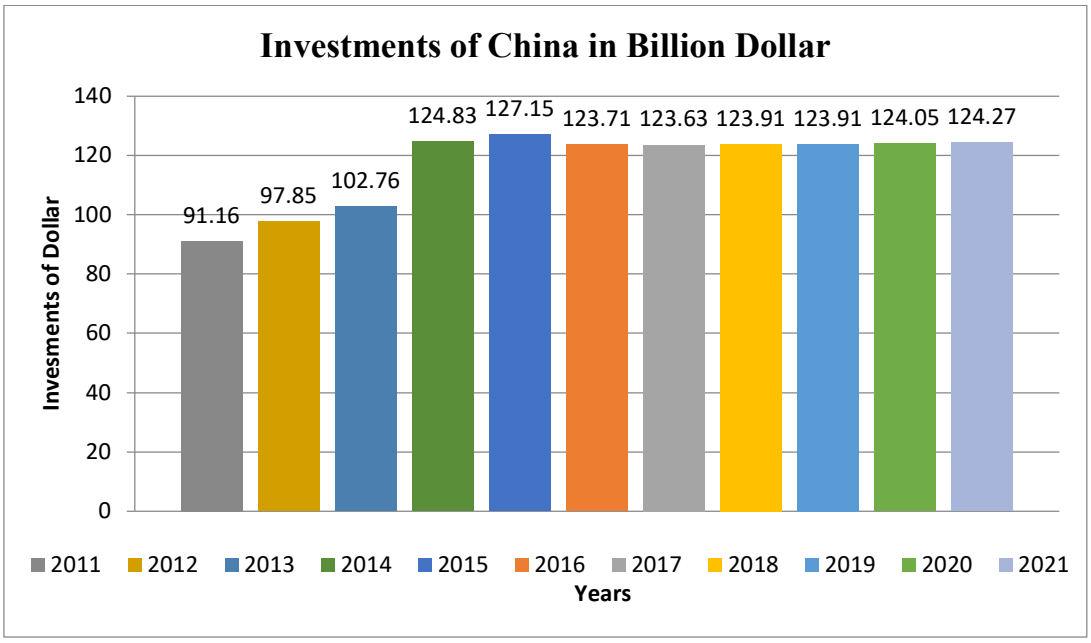

Figure 13: Total Investment of China from 2011-2020

Table 12: Investments of India in a Billion Dollar

Year	**India (In Billion Dollar)**	Investments in China's rail (In billion Dollar)
2011	30,71	91.16

2012	32,51	97.85
2013	34,2	102.76
2014	43,05	124.83
2015	48,89	127.15
2016	55,57	123.71
2017	62,55	123.63
2018	68,59	123.91
2019	76,06	123.91
2020	84,91	124.05
2021	88,92	124.27

Source: Statista Database Company, German

According to CAG, 89.7% of the railway's income is forfeited to concessions because elderly persons and privileged pass holders are given preferential treatment. Numerous cases of pass abuse and erroneous concessions based on medical certifications were observed. Lack of proper validation controls in the passenger reservation system makes it impossible to verify the age of freedom fighters and prohibit irregular repeated bookings on the same privilege pass.

The global pandemic scenario that followed the COVID-19 pandemic situation caused the Indian Railways to cease the mail, express, and passenger train services, which had further negative impact on the operating ratio. Due to the risk of spreading COVID patients, the railway is now running little over 60% of its overall postal, express, and passenger services throughout the country until March 2021.

Problems

Human Resource

Indian Railway is having high staff to work output ratio. Due to this, cost of staff is very high. There are 500 plus cadres in Indian Railway which is very high no. It should be reduced. This created artificial complexity in the organization and reduced flexibility for working. It increased centralization.

Multi-tasking of job and multitask culture does not exist in Indian Railway. This ultimately causing reduced efficiency and delayed work culture. It increases higher no of staff and ultimately higher expenditure on human resource.

Commercial Approach

Need to give door to door service to customer with focus on best service delivery. This is lacking at present scenario. There is no free hand to local management to manage and take decision for the best utilization of resources to bring higher business. Demand based fare system like private sectors should be available for the railways with the use of new technology.

Technology and High-Speed Railway

In today's global world, time is precious than money. Hence railway punctuality and door to door service is very important. On this front, railway is losing customer to road and air sector. Due to raising quality of road, road transportation has taken major chunk of railway in low distance. On other front, air traffic rate is gone down whose rate are equal to 2AC car of railway and some where it gone to level of 3 AC car of railway. This ultimately losing out these customers to Aviation Sector in long distance. Now, Indian Railway has domination in mid-way traffic. Also, need to reduce time for travelling which can be possible by increasing speed of railways. This need to be introduced in passenger as well as freight sectors

7. SUGGESTIVE MEASURES

a) To reduce the cost of passenger transportation, need to remove all types of concession in all categories except ones. Now presently giving concession for students, patients, senior citizens, etc need to be controlled.

b) In Indian railways, need to introduce Multi skilling concept for the staff who will be able to carry out many tasks at one go by one person as per demand of the situation. Due to this, there is no requirement of more cadres and staff. In this, one staff member can do many tasks as per requirement. This ultimately helps in reduced staff strength and more efficient utilization of human resources.

At present there are 500+ plus cadres in the Indian railways which can be easily reduced to 100 around. This needs to be implemented in Indian Railway. By this, staff strength can be reduced, and efficiency will be improved with this. This is policy decision which can be implemented not only in Indian Railways but also other government department.

c) Training is basic part for the better efficiency of staff and output. Indian Training is well articulated and well established which is imparted through one national academy, 7 centralized training institution, 16 zonal training centers and 168 small training centers.

This can be reduced in no and scientifically managed with the help of technology. Japanese Training centers are well articulated and well focused for staff development. Indian Railways can also follow the model adopted by Japan.

d) Presently, promotions at many levels are being given without exams and suitability. Hence, people with the right talent are not coming forward. This is ultimately causing impact over

efficiency and productivity. Thus, it is strongly felt that in non gazetted, exams should be taken while giving promotions.

e) Inefficiency and laxity are being observed in staff work. It led to loss of pyramid structure of organization and moving towards amoebic structure led to inefficiency. This is also observed due to MACP AND CADRE RESTRUCTURING.

Under Modified Assured Career Progression (MACP), staff are promoted without exams and get higher pay without vacancy and responsibility Hence, there is an up gradation of designation and pay based on the length of service. Ultimately, pay raises without increase in responsibility, performance and vacancy too. Many times, staff are refusing promotions as they have already got promotions and benefits under MACP. This can be seen that no of higher-grade designation has been increased many times due to MACP.

f) Cadre restructuring changed pyramid structure of organization to amoeba structure. Through Cadre Restructuring, no of posts are being increased at higher levels of Non-Gazetted and Gazetted. This ultimately raises no of posts at higher level and reduces actual strength of staff and officers at ground level who really perform duties. Hence, it increases strength at higher levels who do work of those who are doing work at lower level with increase in high expenditure on them due to higher salaries on them.

g) There is huge scope for reduction in staff strength by giving incentives to staff and officers for their high performance. It is like the corporate world where employees either have to perform or exit.

For this, we should give incentives to concerned or head of department for reducing the strength and improving the performance and productivity. Ex- Incentives should be given for high earning to commercial department if they over perform beyond their given target.

h) Similarly, we need to hand over the production units and maintenance units to the private sector and only focus on the running of railways. Otherwise, this would increase the cost of running the railway and ultimately create problems in the future. This staff can be redeployed in the railway as per their options.

i) Training should be provided to the worker about those technologies by designing a proper training program. The data of all employees and other things should be made centralized for easier exchanging and policymaking.

j) There is a need to conduct the training and development programs for the employees in the Indian Railways. These programs will surely help the workers as well as Indian Railways because training brings efficiency among the workers.

k) Need to develop online study material for the INDIAN RAILWAY STAFF on the pattern like MISSION KARMAYOGI.

This is developed on the website INDIAN RAILWAY ONLINE TRAINING (www.irot.in) where thousands of videos, PDF study materials, mock question papers are already prepared. On same lines, Indian government is launching MISSION KARMAYOGI

where PRIME MINISTER HUMAN RESOURCE COUNCIL is being established. Same work is done for INDIAN RAILWAY staff here.

l) India need to expand the railway tracks in other countries at least in our neighboring countries. This would increase our trade with them, and our diplomatic ties will be strengthened. Under this, our economic growth in respective states and nations will improve positively.

For this, public private participation (PPP) may be suggested if possible or otherwise government must invest their forex reserve for this purpose. This would definitely improve economic growth

m) High Speed Railway need to introduce in passenger and freight sector. It is required for reducing time and maintaining punctuality. By this way, railway can compete with the road and aviation sector.

8. TECHNOLOGICAL INNOVATIONS BY INDIAN RAILWAY TO IMPROVE HR EFFICIENCY

Pune Division, Central Railway has brought up major transformation in recent years by using the online system for human resources through the introduction of the 'Human Resource Management System'. There has been a series of continuous improvements by adding new digital software- Module. Personnel department, Pune division has completed and finalized digitalization.

Digitalization of APAR (E-APAR): Personnel Department developed and successfully implemented e-APAR Module for non-gazetted employees. All the APARs of non-gazetted employees of Pune Division for the year 2020 successfully completed through this module. It is pioneer work by Pune Division of CR.

Indian Railway Online Training Website (www.irot.in) & Android App: Developed on-line training website named www.irot.in and Android App. Study material for all departments in the form of thousands of videos and texts are made available for improving working knowledge of employees. A mock-test is also available. This is helpful to the employees of Indian Railway for preparation of departmental exams. Around Forty thousand employees have taken advantage of this website and Android App.

Digitization of Personnel Records: Personnel Department Records such as Scale Check Register, Staff Index Register, Pass/PTO Register, Grievance Register, etc. maintained at Depots, Stations are digitized. It can be monitored from the Divisional Office.

Artificial Intelligence introduced through www.railsahayyakpune.in-In this, staff grievances and queries are being resolved through use of the above website and technique of Artificial Intelligence.

Along with this, Computer Based Test, Selection Calendar, Automated Assessment Of Vacancies have been introduced successfully In Personnel Department Of Pune Division. Many of the division visited Pune division and implemented in their division.

With this, Central Railway Information System has introduced the Human Resource Management System where many modules like e-pass, settlement module, office order module, and Employee Self Service modules have been introduced. After this, many other modules will be implemented in the future. With this, HR functions will be digitized in a great way and cadres can be reduced to cut down in wage expenditure.

Due to use of technology in Human Resource of Pune Division, it helped to improve working of HR and fastened the work of staff with zero pendency of staff establishment work. This ultimately helped to bring transparency and employee satisfaction.

9 CONCLUSIONS

Indian Railway is very dynamic organization which can be reformed through strategic changes in Human Resources which consume around 70% Indian revenue and investing for High-Speed Railways. For multi dimensional Railway organization, not only billion-dollar investment required for high-speed railway but need strategic changes in human resources for improving financial position. This would be very interesting to see Indian railway development which ultimately help in moving engine of Indian economy.

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