

Drivers of the Financial Performance of Sri Lanka Railways (SLR)

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Abstract: Sri Lanka Railways (SLR) records continual financial losses after the 1940s with the development of road transportation. SLR needs a strategy to arrest the financial losses either by enhancing the revenue or reducing recurrent expenditure. The general objective of this study is to identify the drivers of financial performance of the railways by analysing financial and operational data from 1977 to 2018. As the specific objective, the study finds the effects of fares, fuel price, increment of salaries and wages, and demand and supply in rail transport. The study analyses revenue and cost structures of SLR using historical graphical analysis. The results show SLR's financial loss is mainly attributed to the diminishing market for freight transport over passenger transport, rapid growth of fuel cost following market prices, and the increment of salaries and wages. Moreover, rail fare revisions and volume growth had inadequate contributions to the financial performance of SLR.

Keywords: Revenue, Financial Performance, Recurrent Expenditure, Railways, Operating loss

1. INTRODUCTION

In Sri Lanka, rail transportation plays a major role as a mode of public transport by facilitating mobility and accessibility to passengers and freight. Sri Lanka Railways (SLR), formerly known as the Ceylon Government Railways was established as a Government Department in 1864 by Railway Ordinance to provide rail transport and stands to date as a government monopoly. Rail transportation was initiated for transporting coffee harvest from hilly areas which was later expanded to the transport of tea and other agricultural products from plantation areas to the Colombo Port mainly for export to Europe. Presently, the rail network radiates from Colombo on nine railway lines making a total network of 1,465 track kilometers. With inadequate reinvestment in physical infrastructure and increasing competition from road transport, the market share of the railway in passenger traffic has declined to 5% even though the passenger journeys has increased to 130 million. The railway presently carries around 2 million freight tons representing 2% of total freight movements in Sri Lanka.

In the early stages, the railway was a dominant mode for freight transport having substantial revenue and profitability. As per the SLR statistics, until 1935, there was a profit except for the first two years. But, this situation changed with the focus given by the Sri Lankan economy towards industrial and service sectors from plantation agriculture. According to Chanmugarajah (1991), from 1920 to 1930, the percentage of profit to earnings fell from nearly 30 to nearly 20, which was 40 to 60 until almost 1920 as a result of a slow loss of traffic partly due to the trade depression and partly due to road competition. Freight movement by rail considerably declined during the 1930s, and the railway began to show a continual financial loss due to the commencement of freight transport by lorries and passenger transport by buses

with the development of road transportation after independence. In 1941, the percentage of loss to earnings was 22.2, and this figure gradually increased up to 94.0 in 2018 reflecting the weak financial performance continued from profit-making to loss-making service (SLR Annual Reports, 1940-2018). Further to the development of road transportation, issues of the railway sector, i.e., inadequate investments, lack of progressive practices in management and regulations, misdirected rail subsidies, strong trade unions hampering improvements and lack of fare policy have led to a rapid decrease in operational and financial performance over the decades (CUTS2, 2006).

In Sri Lanka, the depleted assets base, obsolete signal, and communication system, and aging rolling stock fleet of rail transportation have severely constrained delivering quality service to the travelling public and goods shippers (National Transport Policy, 2009). According to Kumarage *et al.* (2011), the railway requires more market-oriented approaches as well as a strategy to develop its markets including access to ports and airports as well as multi-modal logistics centers and multi-modal passenger terminals inclusive of the park and ride facilities in order to compete with improved road transport. This reveals that rail transport in Sri Lanka has failed to provide continuous maximum contribution to the national economy with sustained financial and operational performance over the past decades. Hence, SLR needs a strategy to arrest the continuing financial losses in railway operations either by enhancing the total revenue or reducing recurrent expenditure.

Many types of railway research in the past have focused on operational performance to identify railway efficiency in different operational aspects. There is a lack of research that is directly focused on railway financial performance. Hence, the generic objective of this paper is to identify the drivers of SLR's financial performance by analysing financial and operational data from 1977 to 2018. As the specific objective, the study finds the effects of railway fares including passenger fares and freight rates, market diesel price changes, salaries and wages, and the variations of demand and supply (output) that identified as major factors of railway performance in the literature survey. The study focuses on investigating revenue and cost structures in the financial statements of SLR to identify the effects of these factors. The study provides an insight into the policy decision-makers to get viable solutions to minimise the continued operating loss of SLR.

2. LITERATURE REVIEW

Financial performance analysis is an important part of financial management. Financial analysis is an evaluation of the financial health of an enterprise with its financial statements including evaluation of the past, present, and future to identify its weaknesses and strengths (Gazdikova *et al.* (2009); Hyršlová (2017); Agarwal (2013).

The literature shows different key performance indicators and benchmarks used by past researchers to measure railway efficiency and performance. Beck *et al.* (2013) mentioned railway efficiency could be measured using four main key performance indicators, i.e., asset utilization, staff productivity, freight rates, and cost/revenue performance, and efficiency gaps between nations could be identified with these four aspects. George and Rangaraj (2008) did a performance benchmarking study of Indian Railway zones for assessment of railway operational efficiency and identified the best performers over the years and efficiency trends. Accordingly, the inputs identified are operating expenses, tractive effort, equated track kilometers, a number of employees, and the outputs are passenger kilometers, ton (freight) kilometers. Fraszczyk *et al.* (2016) conducted a study to evaluate rail systems performance in Europe with a focus on passenger rail. The study uses four main KPIs for analysis, i.e., length

of the rail track, the annual number of rail passengers, annual number of rail victims, and the number of rail seats and berths. They revealed that despite some areas such as safety improving over time, the rail system seems to be underperforming in terms of total track length and removing higher capacity vehicles which will affect passenger numbers unless a more frequent train timetable is being implemented.

Past researchers have identified different factors of railway efficiency and productivity through railway performance analyses. According to Lan and Lin (2005) enhancing the technical efficiency and service effectiveness, as well as productivity and sales capability, should always be viewed as an important issue for the railway transport industry to remain competitive and sustainable in the market. Couto and Graham (2009) conducted a study on the determinants of efficiency and productivity in European railways analysing the cost structure of the railway industry during the period from 1972 to 1999. The study revealed the cost of European railways is significantly increasing with the inefficiencies by the supply of excess capacity and over-employment of labour inputs, but technological advancement gained the level of productivity. Ahren and Parida (2009) studied the Overall Railway Infrastructure Effectiveness (ORIE) of the Swedish rail network for developing an approach to analysing the factors influencing the performance of railway infrastructure. The calculation of the ORIE for railways follows the concept of industrial overall equipment effectiveness (OEE), which is calculated by the multiplication of the independent factors: the availability, performance rate, and quality rate. Al-Douri (2016) studied for the improvement of the railway performance of the Swedish railway infrastructure. He mentioned that increase in passenger and freight traffic caused degradation of rail track resulting in high maintenance cost and poor performance of rail track quality. He emphasized improving the railway track performance by ensuring increased availability, reliability, and safety, along with a decreased maintenance cost followed by maintenance strategies are essential to enhance the level of performance. Gallagher *et al.* (2019) conducted research on the operating ratio which represents the ratio of its operating costs to its revenue as a measure of railway operating efficiency. They found railway freight rate increases and fluctuation in fuel prices have a significant impact on the operational ratio of rail transport in Canada.

Some past researches based on railway financial performance measures with comparative analyses to ascertain the key financial drivers. Mizutani (1997) conducted research on comparative analysis of financial performance between the US and Japanese urban railways. The study analyses the factors which affect profitability levels such as fare level, urban structure, wage level, and productivity. The study identified that fare level and productivity are the main factors for financial performance and creating the financial differences between the two countries' systems. Murugaiah (2017) shows that a low operation ratio will give good results in the improvement of financial performance which depends on gross earnings and working expenses. He mentioned that working expenses are clear as the spending experienced in linking with the administration, operation, maintenance, and repairs of lines open for traffic while the earnings include coaching, goods, and sundry earnings. Cantos *et al.* (2002) researched cost and revenue inefficiencies for a sample of European railway companies by decomposing them into inefficiencies of a technical or allocative type. The research emphasized that companies' efforts should be devoted not only to improving the utilization of their productive inputs but also to improve their commercial and revenue policies.

The literature shows varied internal and external factors, including government policies, have impacted the financial performance of rail transportation. Kravchenko and Bohomolova (2019) studied on Determinants of railway transport sustainability in Ukraine. They showed external determinants of the macro-environment include economic, socio-political, demographic factors, and government participation for railway financing which is beyond the

control of railway enterprise whereas internal determinants include the lack of effective institutional transformations of the industry, the state of non-current assets, deterioration of the financial condition, and low investment activity. According to the World Bank (2011), financial performance in rail transportation depends on internal and external factors, and some factors of these are market-specific and some factors, i.e., subsidies, capital grants are influenced by government policy decision making. Furthermore, a railway achieves financial sustainability when it has sufficient longer-term financial resources to cover operational costs, invest, and meet debt service and other financing requirements. According to past research, fare level, wage rates, input and output levels are the major revenue and cost drivers of financial performance in rail transportation.

3. METHODOLOGY

The study carried out a graphical analysis using historical railway data to identify the underlying factors for the fluctuation of key financial variables under revenue and expenditure analyses. As elaborated in Section 1, the graphical analysis focused on the effects of railway fares, freight rates, fuel price, salaries and wages, variations of demand and supply levels on revenue and expenditure that identified as important external factors of railway efficiency and productivity through the literature survey. Accordingly, the study collects annual data variables, i.e., that of total revenue, recurrent expenditure, total net revenue (profit/loss), passenger revenue, freight revenue, number of passengers, total freight tons, passenger kilometers, freight ton-kilometers, expenses on fuel, salaries and wages, fuel price, operated train kilometers and locomotive kilometers for the period of 41 years from 1977 to 2018. The financial performance of SLR is reflected by the operating profit/loss in the account statements which are mainly affected by the drivers of total revenue and recurrent expenditure. The SLR generally confronts a greater amount of capital expenditure, which is the major category of total expenditure due to large capital investments by the government. Hence, the total expenditure is not taken into consideration by the SLR for accounting financial performance.

The graphical analysis consists of two analyses, i.e., revenue analysis and expenditure analysis. The study finds the effects of passenger fare and freight rate revisions and effects of passenger and freight volume and other external factors under the revenue analysis. Furthermore, the study focuses on the effects of market fuel price changes, salaries and wages, and variations of railway supply (output) level under the expenditure analysis. The necessary financial and operational data were collected from the published and unpublished data sources of SLR, i.e., annual reports, administrative and statistical reports, web-based data, and internal statistical databases and fuel price data were collected from the Ceylon Petroleum Corporation. The study used Colombo Consumer Price Indices (CCPI) published by the Central Bank of Sri Lanka as a deflator to show the financial data series in constant 1977 rupees in order to remove the inflation effect.

4. GRAPHICAL ANALYSIS

4.1 Operational Performance

Figure 1 depicts the operating ratio and total operating loss of SLR from 1977 to 2018. Both the operating ratio and operating loss (in current rupees) increased with significant fluctuations reflecting weak financial progress over the decades.

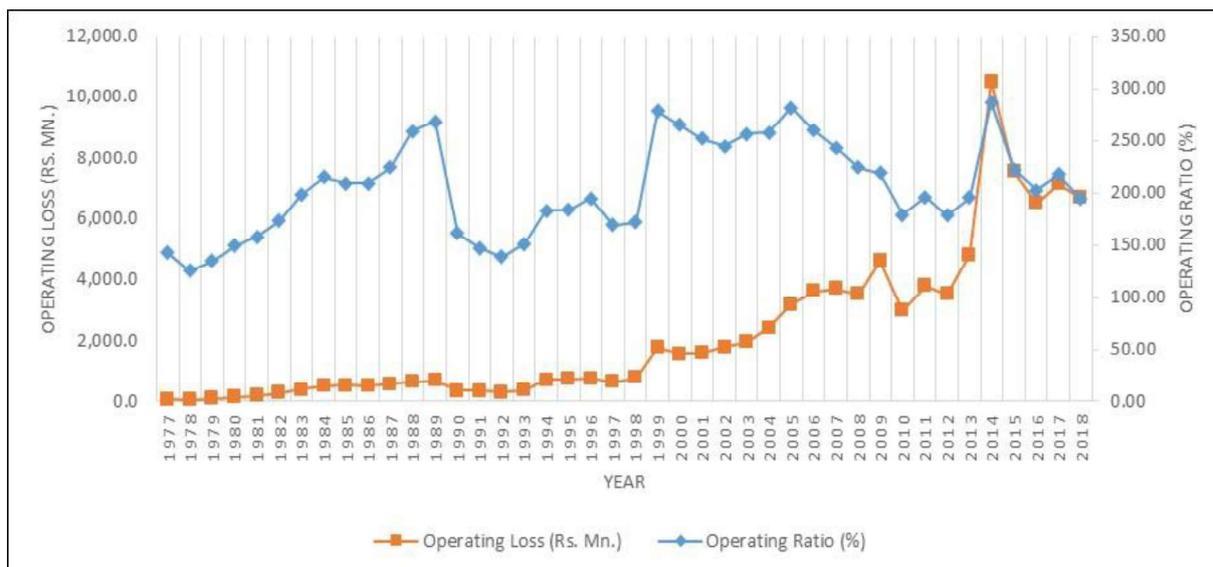


Figure 1. Operating ratio and operating loss

The highest positive growth in the SLR's operating ratio and operating loss was recorded in 1999 and 2014. The weak financial performance (Operating ratio growth = 62%, Operating loss growth = 118%) in 1999 compared to the previous year attributed by high recurrent expenditure due to payment of outstanding fuel bills (122% growth) and increase of salaries and wages including overtime, holiday pay, incentives, and other allowances (41% growth). In addition, external effects such as fewer earnings from passenger traffic caused by curtailment of train services with the unsettled security situation in the country led to this unfavourable performance. The high operating ratio and operating loss (Operating ratio growth = 47%, Operating loss growth = 114%) recorded in 2014 attributed to the growth of fuel expenditure (159% growth) due to the high amount of outstanding bills highly affected the operating loss of the year 2014.

The highest negative growth in SLR's operating ratio and operating loss was recorded in 1990, 2010, and 2015. The significant decrease of operating ratio and operating loss (Operating ratio growth = -40%, Operating loss growth = -47%) in 1990 attributed to normalized train operation and thereby increased earnings from passenger and freight traffic. The Operating ratio and operating loss decreased in 2010 (Operating ratio growth = -18%, Operating loss growth = -33%) as a result of increasing freight revenue from transporting oil products and cement raw materials. In 2015, the operating ratio and operating loss contracted (Operating ratio growth = -23%, Operating loss growth = -30%) due to the significant decrease in fuel and lubricant cost after settlements of outstanding bills in 2014. A deep analysis of SLR's Administrative reports reflects external factors such as fluctuations of fuel price, an increase of salaries and wages by the government, security condition of the country, subversive activities such as labour strikes that adversely affected train operation and unfavourable weather conditions that caused fluctuations in the operating and financial performance of SLR. Moreover, the continuation of outstanding amounts due to the common process of settling financial accounts has led to irregular fluctuations in total operating loss.

The SLR's operating ratio in 1977 records 142.4 percent, and it has increased up to 194 percent in 2018 with an annual average growth rate (AAGR) of -0.48 percent during the study period. The total operating loss (in current rupees) of SLR in 1977 is Rs. 79.8 million and this amount increased up to Rs. 6,968 million in 2018 with an AAGR of 5.4 percent reflecting continual weak financial performance over the decades.

4.1.1 Revenue analysis

Revenue of SLR mainly consists of operating revenue and non-operating revenue. The operating revenue of SLR consists of passenger revenue, freight revenue, and mail and parcel revenue. Non-operating revenue (Miscellaneous) includes advertisement income, train reservations, transport income, rents, income from stalls and shops, railway station canteens, and stores. Among the revenue components, passenger revenue is the major income source which accounts for 80 percent of total income on average. Passenger revenue is generated by transporting passengers with ordinary tickets and season tickets which account for 80 percent and 20 percent of total passenger income respectively on average. Freight revenue, the second major single category of total revenue which accounts for 6 percent of total revenue, is mainly generated by transporting Prima flour, cement, limestone, and petroleum products.

Figure 2 depicts the variation in annual growth of total revenue from 1977 to 2018. Total revenue significantly increased by 30 percent up to Rs. 312.1 million in 1979 owing to the remarkable increase in freight revenue by 69 percent up to Rs. 107.5 million compared to the previous year. Moreover, the freight tonnage increased from 17.8 million in 1978 to 18.7 million in 1979 contributed to this revenue increase. In 1990, the total revenue increased by 48 percent up to Rs. 686.4 million compared to the previous year. This increase was mainly attributed to the growth of passenger revenue by 77 percent up to Rs. 415.2 million compared to the previous year. The increase of freight revenue by 24 percent up to Rs. 205.0 million and the tonnage carried by 18 percent up to 1.4 million tons also contributed to this revenue increase. However, the freight ton-kilometers contracted in 1979 and 1990 by 0.3 percent and 4 percent respectively.

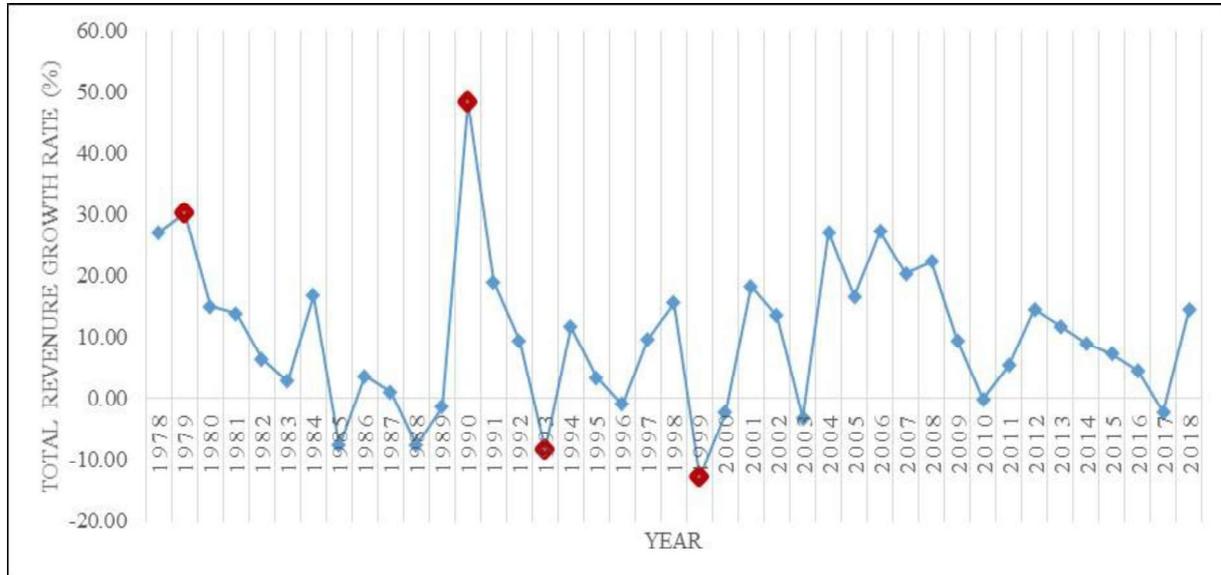


Figure 2. Total revenue growth rate

In contrast, SLR's total revenue remarkably decreased by 8 percent up to Rs. 820.5 million in 1993 due to contraction of freight revenue by 13 percent (from Rs. 237.8 million to Rs. 206.7 million) compared to the previous year. Further, reflecting the drawback of freight traffic in 1993, the tonnage carried and ton-kilometers operated decreased by 13 percent up to 14.0 million and 10 percent up to 159.2 million respectively. The total revenue significantly decreased by 13 percent up to Rs. 1038.4 million in 1999 with the effect of contracting passenger revenue by 0.5 percent up to Rs. 678.5 million and the total passengers transported

by 2 percent up to 80.7 million compared to the previous year. The statistics show the variation of total revenue mainly affected by the financial and operational performance in passenger and freight transport during the study period.

As per Figure 3, the key factor of improving the total revenue (in current rupees) of SLR is the rapid growth of passenger revenue during the last four decades compared to freight revenue. Passenger revenue increased by 700 percent compared to a 215 percent increase in freight revenue during the last two decades.

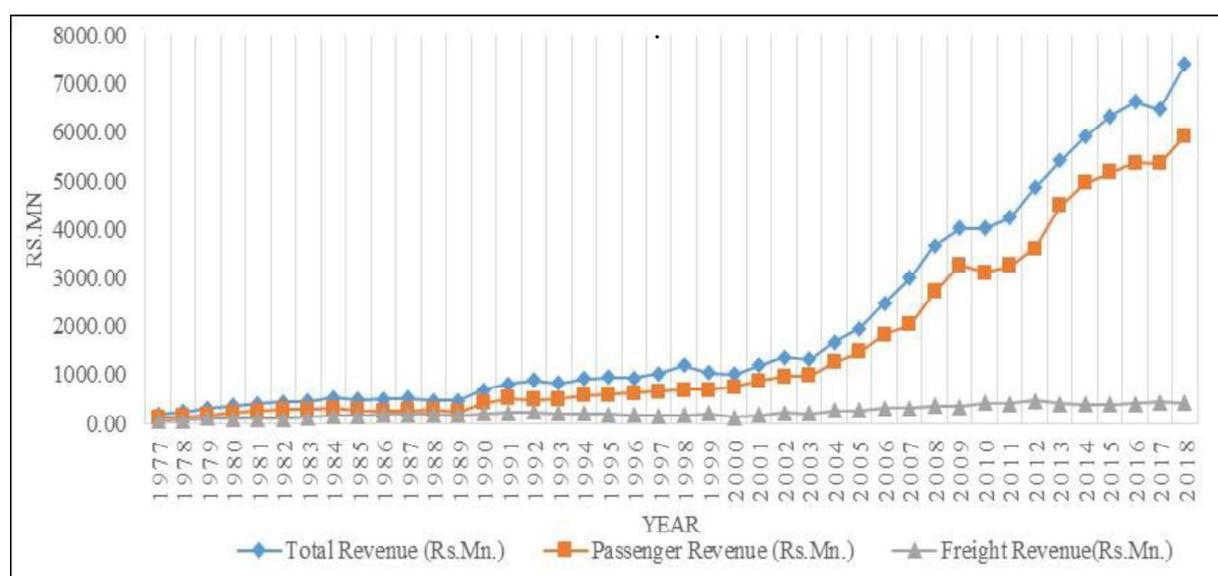


Figure 3. Total revenue, passenger revenue and freight revenue (millions of current rupees)

Figure 4 depicts the composition of passenger revenue increased from 60.2 percent in 1977 to 80.0 percent in 2018 whereas freight revenue composition shows a significant decrease from 26.8 percent in 1977 to 7.0 percent in 2018.

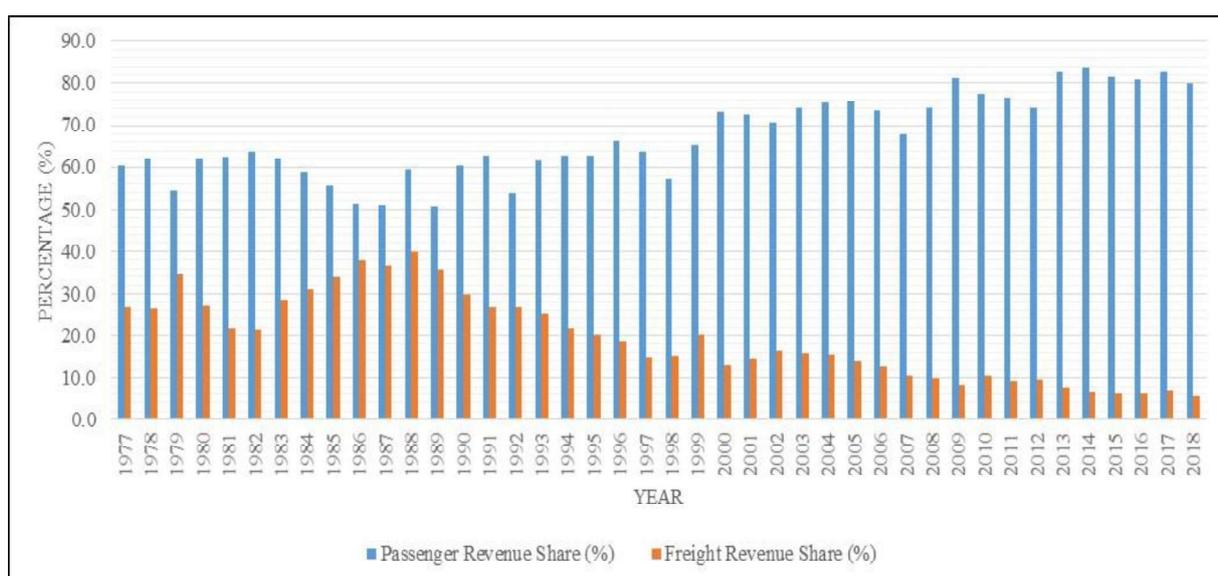


Figure 4. Passenger revenue share and freight revenue share

As per Figure 5, the total revenue, passenger revenue, and freight revenue in constant prices (based on CCPI, 2013=100) declined by 28 percent, 4 percent, and 84 percent respectively. The AAGR of total revenue, passenger revenue, and freight revenue are -3.5 percent, 0.49 percent, and -3.12 percent respectively. This reveals freight revenue is the crucial factor of declining total revenue during the study period.

Passenger revenue decreased steadily during the 1980s, and the main reason for this drawback is the withdrawal of passenger services on the Northern line because of terrorism. Passenger revenue gradually increased after the year 2000 due to increased resource utilization (passenger train kilometers) and service consumption (passenger kilometers) with the capital investment incurred on route extensions, rehabilitation of rail tracks, and improving other infrastructure facilities after ending the civil war (Figure 19 and Figure 11).

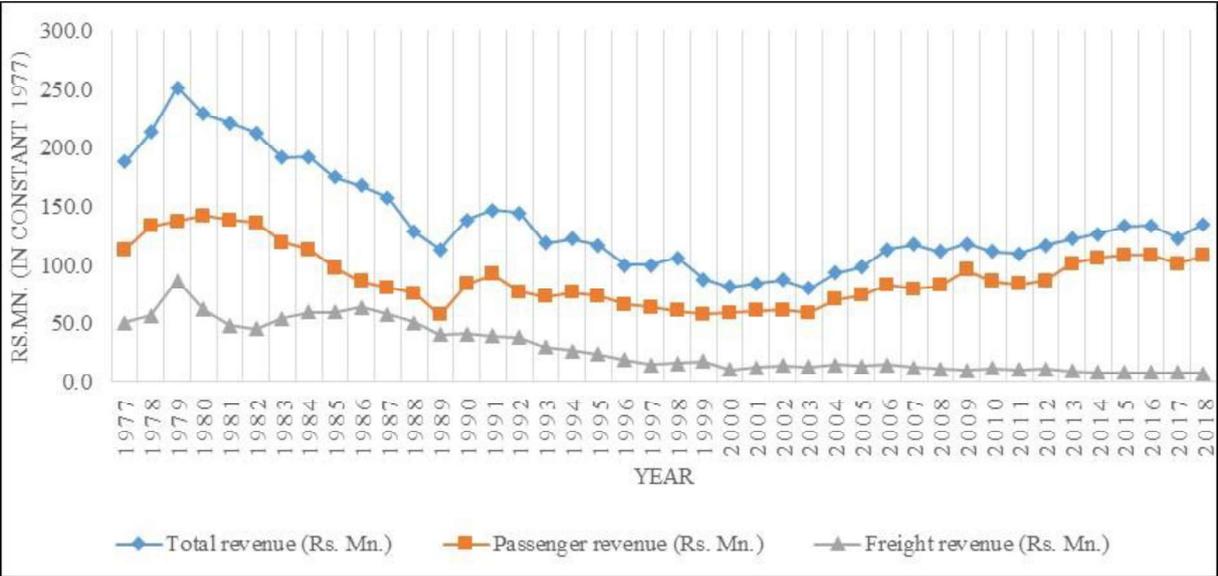


Figure 5. Total revenue, passenger revenue and freight revenue (millions of constant rupees)

Freight revenue increased sharply in 1979 with the increase of freight rates which amounted to trebling the normal rates, and the negative effect of this rate increase can be seen from its effects on total revenue (Figure 5) and per ton-kilometer earnings (Figure 9) in subsequent years. Freight revenue gradually decreased over decades with the improvement of road freight traffic and less priority given by the government to improve freight rail transportation.

As per Figure 6, the total market share for both passenger and freight gradually decreased over the decades with the development of road transportation. The total market share for rail passenger transport and rail freight transport from the total motorized transport accounts for 8 percent and 23 percent respectively in 1977, and it decreased nearly to 4 percent and 1 percent in 2018. The AAGR of rail passenger and freight market share are -1.15 percent and -6.21 percent respectively, and this reveals the diminishing market for rail freight transport over rail passenger transport during this period.

Figure 7 shows the total goods transport vehicles including lorries and trucks gradually increased whereas total goods wagons of rail transport significantly decreased during the last four decades. This reveals the declined market share for rail freight transport and policy priorities by the government for improving road freight transport compared to rail which contributed to a significant drop in freight revenue.

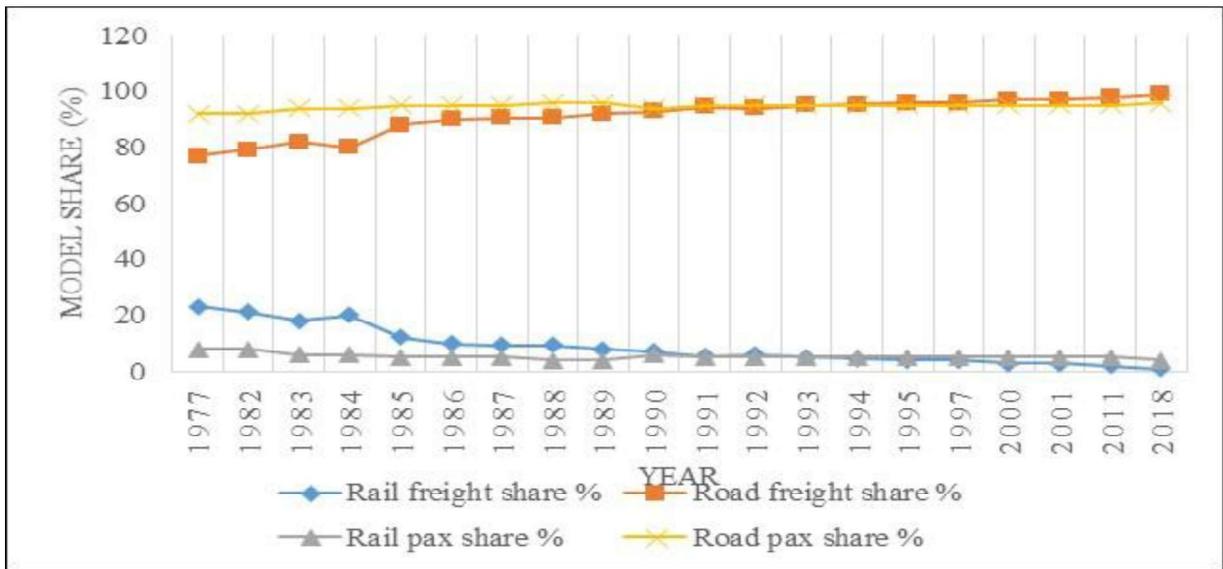


Figure 6. Rail and road market share for passenger and freight transportation

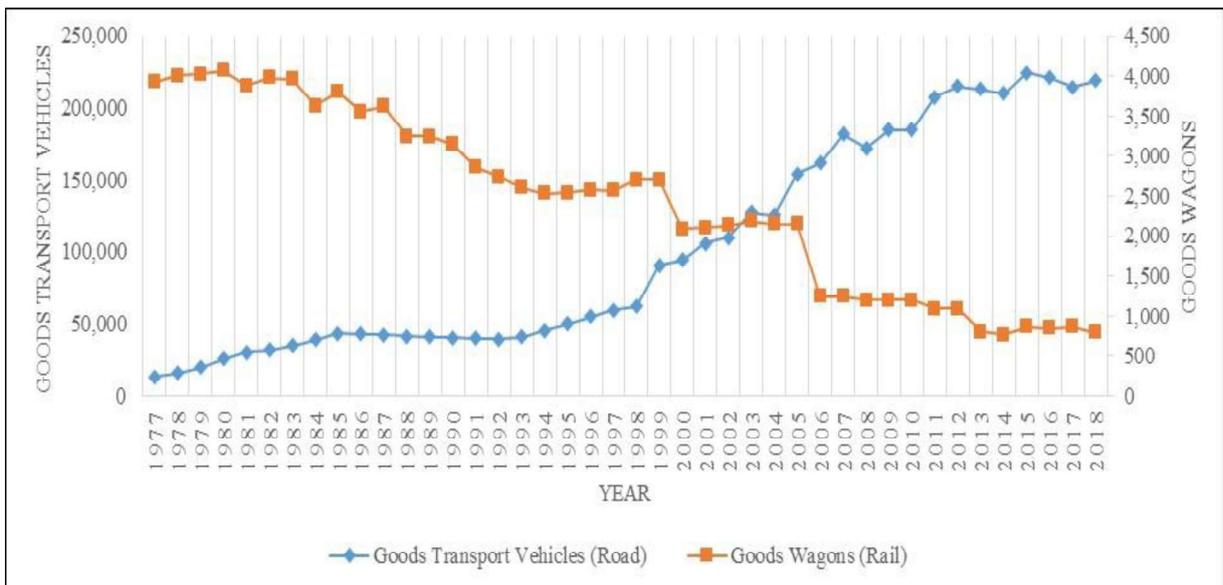


Figure 7. Goods transport vehicles by road and goods wagons by rail

Effect of passenger fares and freight rate revisions

Figure 8 shows that the upward fare revision by the government has contributed to increasing the Fare per Passenger Kilometer (FPK) in current rupees. The government revised passenger fares for all classes (1st class, 2nd class, and 3rd class) in certain years consistent with fuel price hikes. In 1977, FPK in SLR amounted to Rs. 0.04 and this figure increased up to Rs. 0.77 in 2018. This reveals FPK in rail transportation is comparatively smaller than public bus transportation (As per (O-51 Report of SLTB in 2018, the FPK in the state bus transportation is 1.81). Particularly, passenger fares revised by the government in 1980 and 1983 (Sri Lanka Railways, 1980-1990) during the 80s due to the increase in the diesel price and high operating

cost. This affected the increase of FPK by 42 percent and 27 percent respectively compared to the previous year.

Further, passenger fares revised in 1991 and 1996 (Sri Lanka Railways, 1990-2000) during the 90s affected an increase in FPK by 30 percent and 12 percent respectively. As a consequence of passenger fare revision as a measure to fuel price hike in 2004, 2005, and 2008 during the 2000 decade, FPK increased by 27 percent, 30 percent, and 36 percent respectively (Sri Lanka Railways, 2000-2010). In 2018, passenger fares were revised by the government resulting 8 percent increase in FPK (Sri Lanka Railways, 2018). Even though passenger fare revision by the government in the aforementioned years has led to increasing FPK (in current rupees), FPK in constant prices decreased by 63.59 percent with an AAGR of -1.90 during this period. This reveals the rate of fare revision has not significantly affected the increase in passenger revenue during this period.

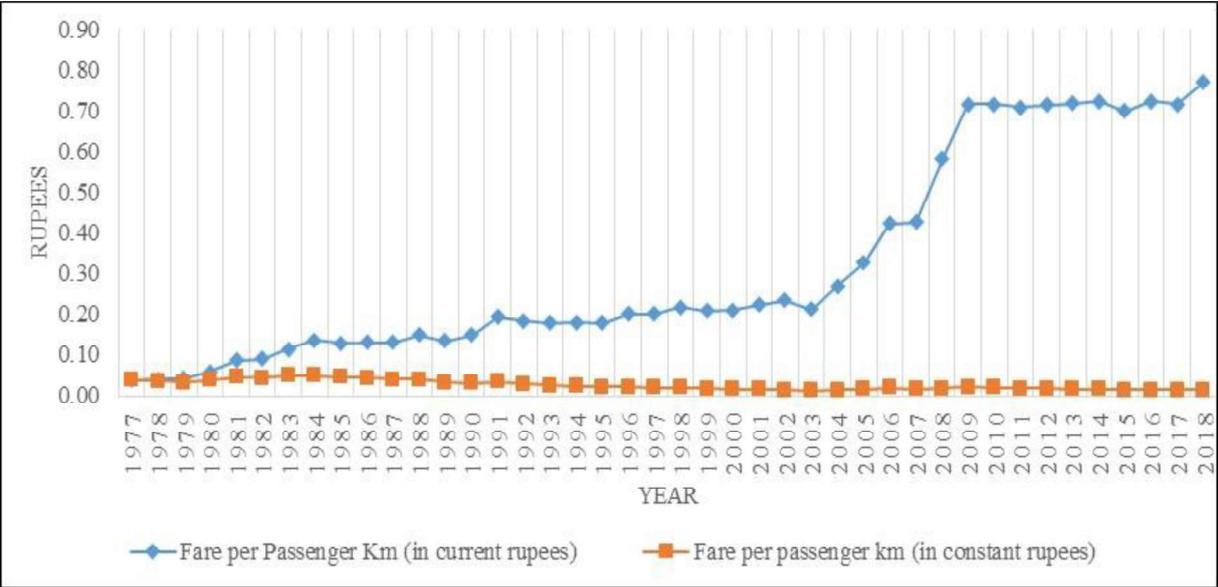


Figure 8. Fare per passenger kilometer

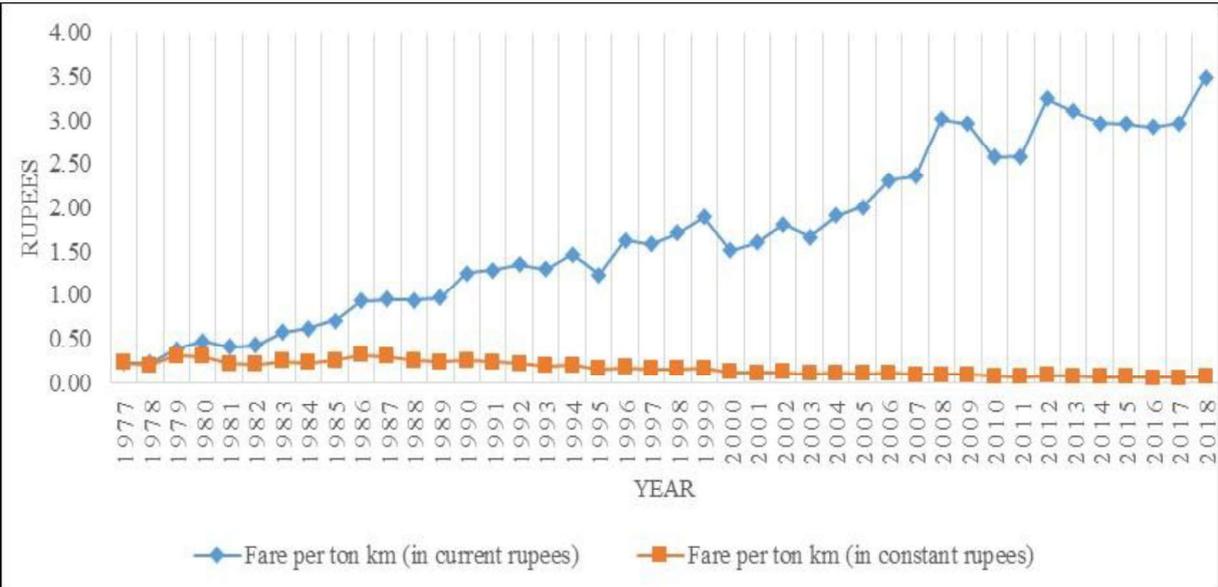


Figure 9. Fare per ton kilometer

Figure 9 depicts the effects of freight rate revision on Fare per Ton Kilometer (FTK) from 1977 to 2018. The SLR has a two-tier charging system for goods wherein goods carried are grouped into classes with different rates for each class and are charged accordingly, depending on whether the goods are carried on lines in the low-lying area of the island or on lines in the up-country. The government revised freight rates in 1979, 1990, 2001, and 2007 (Sri Lanka Railways, 1977-2018) for all goods which affected the fluctuations of FTK and thereby total revenue over the decades.

In 1977, FTK records Rs. 0.23, and this amount increased up to Rs. 3.49 in 2018. The upward revision of freight rates by 200% for all commodities in 1979 led to increasing in FTK by 70 percent compared to the previous year that resulted in a 69 percent growth rate of freight revenue up to Rs. 107.5 million. The revision of freight rates in 1990 and 2001 furthermore led to increasing in FTK by 24 percent and 30 percent respectively. This increment was attributed to a 24 percent growth rate of freight revenue in 1990 up to Rs. 205.0 million and 30 percent growth rate of freight revenue in 2001 up to Rs. 173.9 million. However, the freight rate revision in 2007 resulted from a comparatively slight increase of FTK by 2 percent whereas diminution of freight revenue by 1.6 percent up to Rs. 314.1 million due to the non-flexibility of rail freight transport and the low availability of freight trains in the same year. Even though FTK increased in current rupees, FTK in constant prices decreased by 72.5 percent from Rs. 0.23 in 1977 to Rs. 0.06 in 2018 with an AAGR of -2.13 percent. This reveals that freight rate revision has not significantly affected the increase in freight earnings.

Effect of passenger and freight demand

Figure 10 and Figure 11 show the effect of passenger and freight demand for rail transport from 1977 to 2018. Figure 10 clearly depicts total passenger trips increased by 109 percent from 65.8 million in 1977 to 137.5 million in 2018 whereas the total number of goods carried increased comparatively, at a low rate, that of by 29.2 percent from 1.4 million in 1977 to 1.8 million in 2018. This reveals that even though the number of passengers transported significantly increased, the total volume of freights has not significantly improved over the last four decades. Further, total passenger kilometers increased by 160 percent and freight ton-kilometers decreased by 45 percent during the study period (Figure 11).

As per Figure 10 and Figure 11, passenger and freight traffic contracted in the 80s by 48 percent and 35 percent respectively with the development of road transportation (Figure 6). Passenger traffic contracted after private buses came into operation in 1979 and freight traffic contracted with the gradual increase of road motor lorry service (Figure 7). Furthermore, problems associated with the operation of trains since 1983 consequent on terrorist activities in the Northern and Eastern Provinces and sets of subversives in the other parts of the island including trade union actions resulted in the contraction of both passenger and freight operations (Sri Lanka Railways, 1980-1990). This led to increasing total revenue comparatively at a lower rate during the decade.

As per the Sri Lanka Railways (1990-2018), the drop of passengers mainly attributed to curtailed train services due to unsettled security situation during the 90s (1992 and 1999), closure of rail tracks for rehabilitation, and adverse weather conditions (2010), and rail union strikes (2017). This impacted the contraction of passenger revenue and total revenue of SLR in the pertinent years. Similarly, the freight traffic by rail transport is mainly affected by the demand for transporting raw materials of the cement product, which is the bulk of the total quantity of freight, shortage of locomotives and freight wagons to cater the demand, problems of procurement of spare parts due to lack of funds after 1980. The significant increase in freight traffic in 2010 was mainly due to increased haulage of oil products and cement by railways.

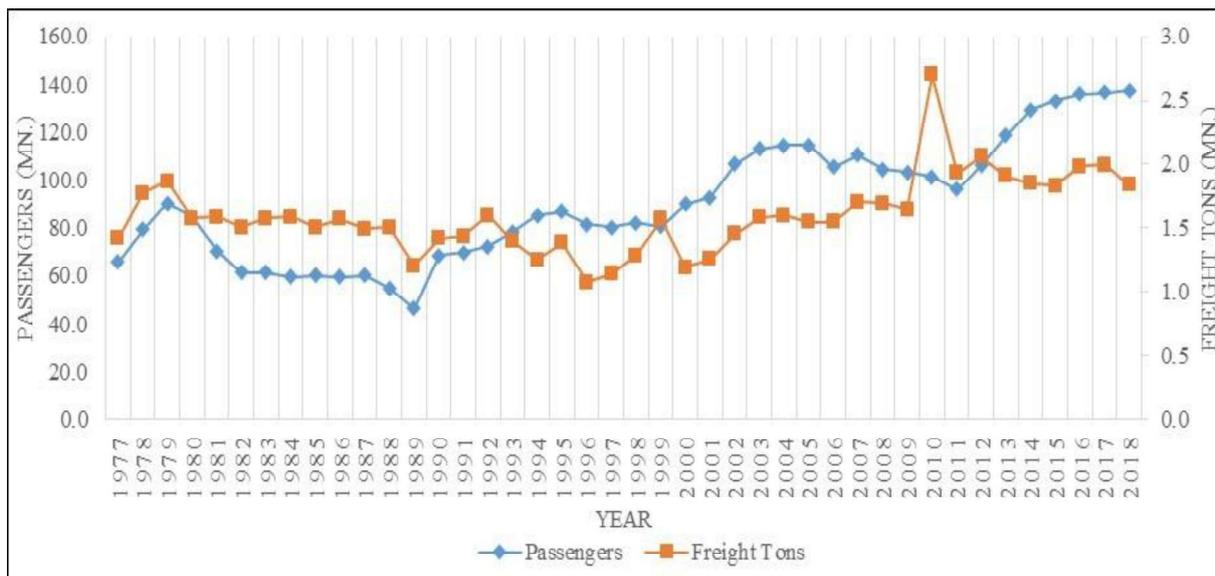


Figure 10. Annual passenger trips and freight tons carried

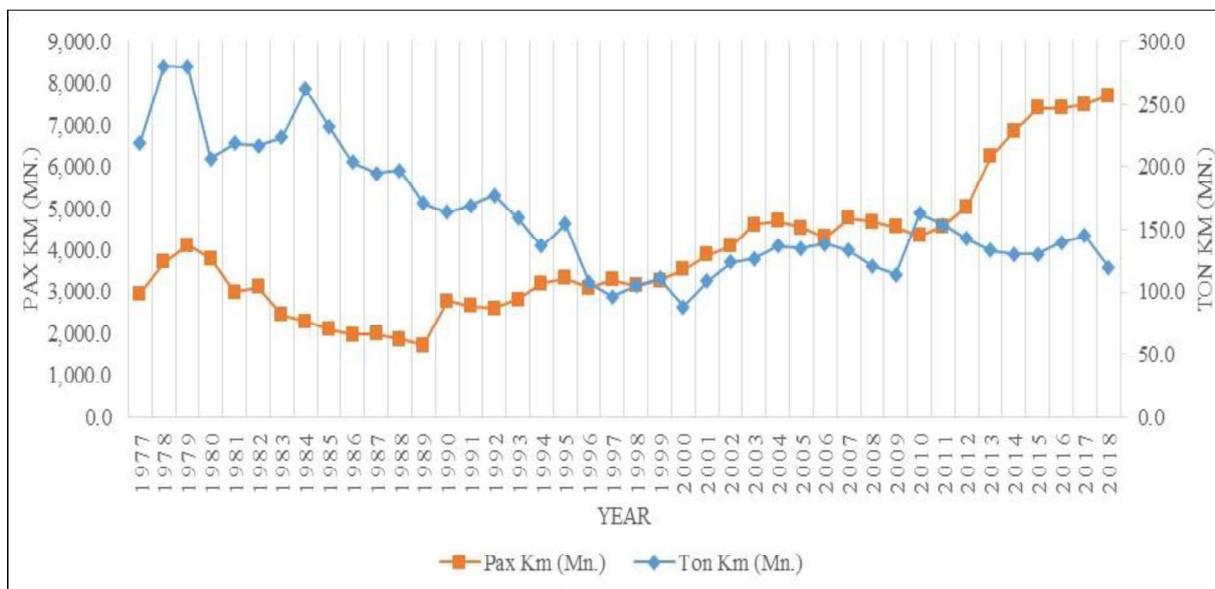


Figure 11. Passengers kilometers and freight ton kilometers

The AAGR of passenger kilometers and freight ton kilometers are 3.04 percent and -0.5 percent respectively. Furthermore, the AAGR of passenger volume records 2.26 percent whereas the AAGR of freight volume is 1.5 percent during this period. However, the significant increase in passenger traffic, whereas the diminishing of freight traffic has not fairly affected total revenue in real terms due to the contraction of total rail market share for both passengers and freight (Figure 6). Hence, the revenue analysis reveals that demand escalation for passenger transport despite the contraction of freight transport has not adequately contributed to increasing total revenue.

4.1.2 Expenditure analysis

Total expenditure (recurrent) consists of Personal Employee Emolument (PEE) including salaries and wages, overtime and holiday pay, fuel cost, and other supplies and requisites

(stationary, uniforms, travelling), expenses for maintenance, contractual services, and transfers. Among the expenditure components, PEE is the highest category which accounts for 63 percent and fuel expenditure is the second major category with the proportions of 30 percent of total recurrent expenditure on average.

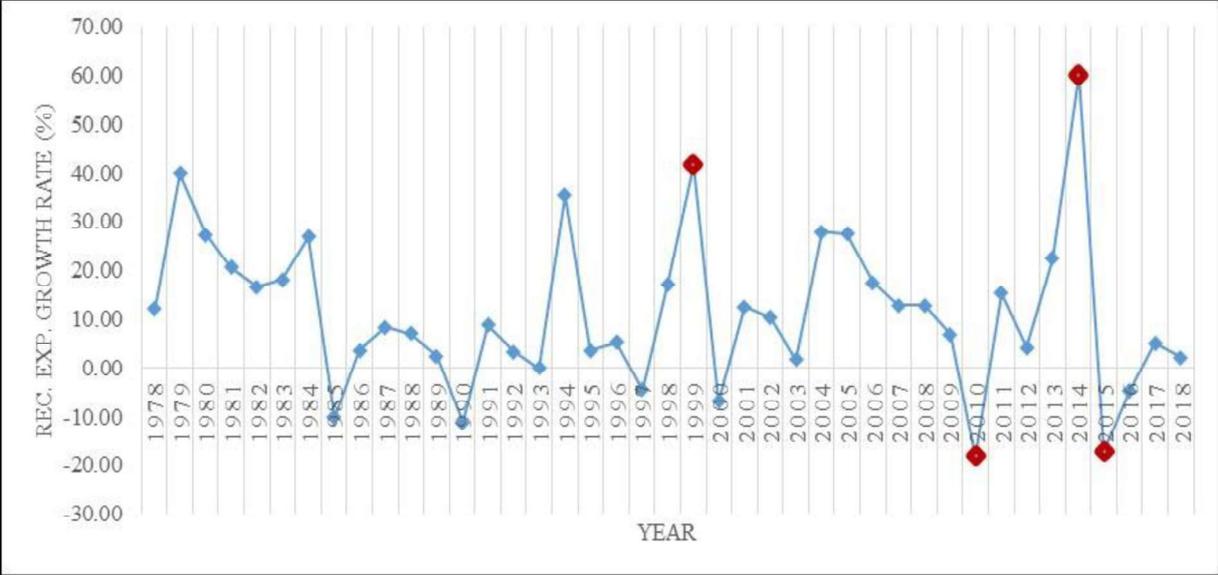


Figure 12. Total recurrent expenditure growth rate

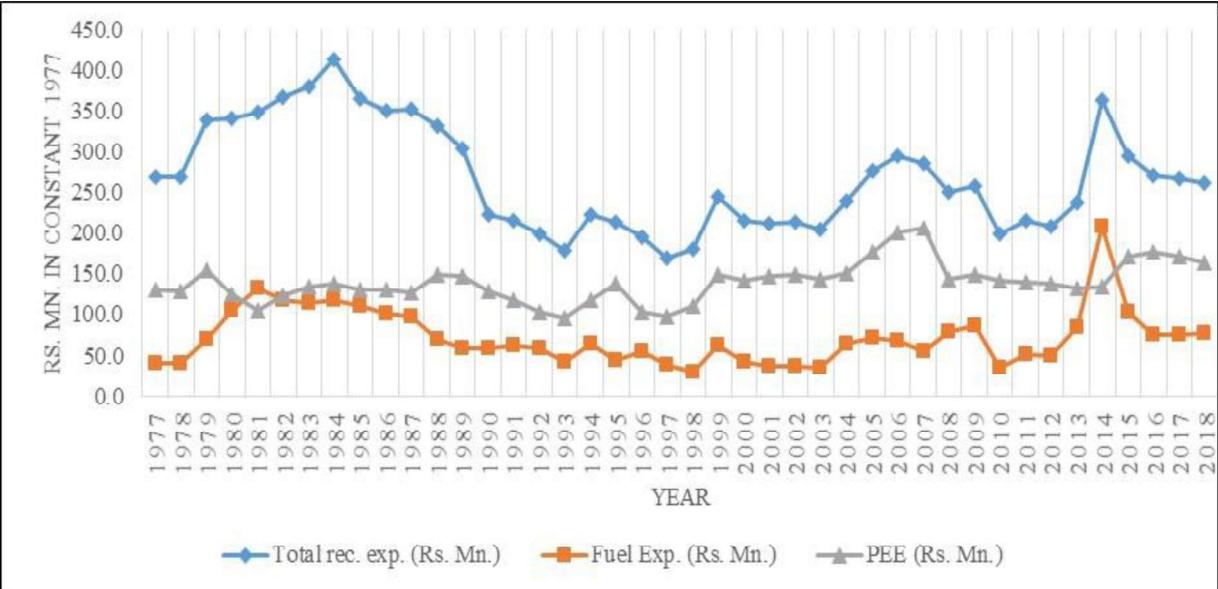


Figure 13. Total recurrent expenditure, fuel expenditure and personal employee emoluments (millions of constant rupees)

Figure 12 shows the effects for short-term variations of total recurrent expenditure from 1977 to 2018. The highest growth of total recurrent expenditure is that of 42 percent growth rate in 1999 up to Rs. 2,885.6 million and 60 percent growth rate in 2014 up to Rs. 16,943.3 million is attributed to the payment of outstanding fuel bills in the previous years. In addition, salary increase by the government which affected overtime, holiday pay, incentives, and other allowances of employees affected the growth of recurrent expenditure in 1999. In contrast, the total recurrent expenditure dropped by 18 percent in 2010 due to non-accounting of the full

amount of fuel consumed during the year. In 2015, the total recurrent expenditure decreased by 17 percent with a significant drop in fuel expenses after the settlement of outstanding bills in 2014 irrespective of the increase of PEE by 31 percent accompanied by the salary increase.

Figure 13 depicts that total recurrent expenditure in constant prices slightly decreased by 2.7 percent from Rs.268.2 million in 1977 to Rs. 260.9 million in 2018 with an AAGR of 0.91 percent. Fuel expenditure increased by 89.6 percent from Rs. 40.6 million in 1977 to Rs. 77.0 million with an AAGR of 8.41 percent. Further, PEE increased by 25.7 percent from Rs. 131.1 million in 1977 to Rs. 164.7 million in 2018 with an AAGR of 1.41 percent. Accordingly, fuel expenditure is the major contributory factor for the increased recurrent expenditure during this period.

Effect of the increment of salaries and wages

Figure 14 depicts that the total number of employees in SLR was 25,520 in 1977, and this amount decreased up to 14,885 in 2018 with the effect of early retirement schemes and comparatively lesser recruitments with technological advancements. Per capita employee earnings (in constant rupees) increased from Rs. 5,136 in 1977 to Rs. 11,065 in 2018 with an AAGR of 3.1 percent. In 2008, the total PEE contracted since the expenses on overtime, Sunday pay, and incentives incurred under minor repairs accounted for capitalised expenditure under the direction of the general treasury from 2008, and this led to -33.2 percent growth of per capita earnings. The rapid increase of the cost of employees irrespective of the significant decrease in total employees reveals that PEE is a major contributor to total recurrent expenditure.

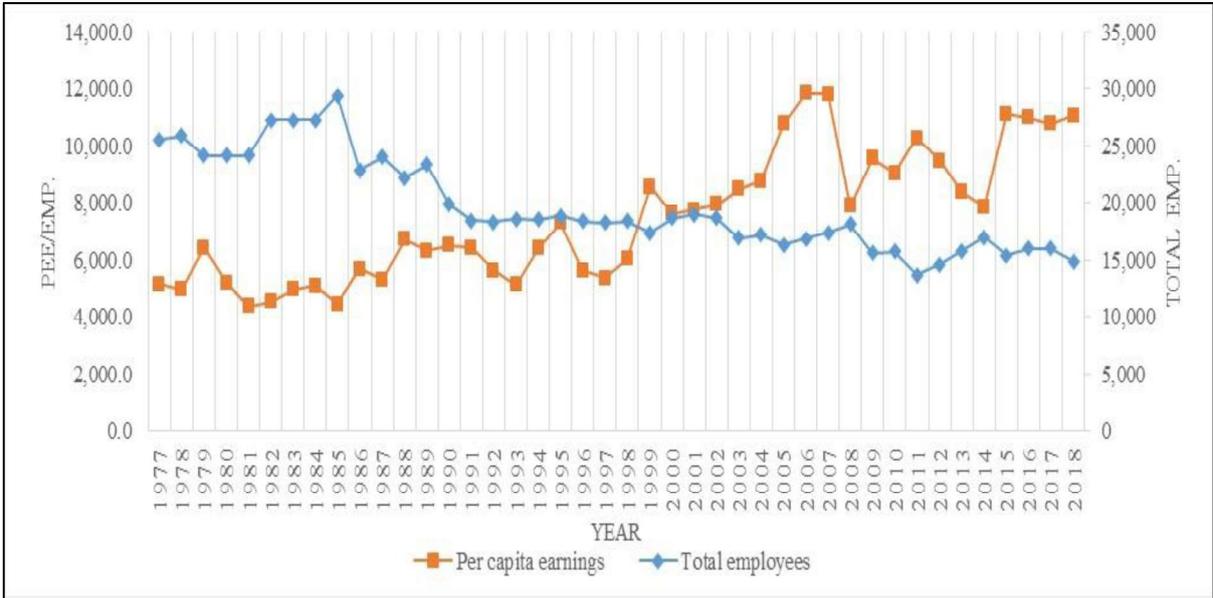


Figure 14. Total employees and per capita employee earnings

Figure 15 shows the nominal wage rate index of central government employees and the growth of per capita earnings (in current rupees) of SLR employees from 1978 to 2017. Accordingly, per capita earnings increased by 13.18 percent of AAGR over the nominal wage rate of government employees which had 11.83 percent of AAGR. This reveals the incremental effect of salaries, wages, and other allowances of SLR is influenced by the trade union actions owing to SLR’s monopoly power.

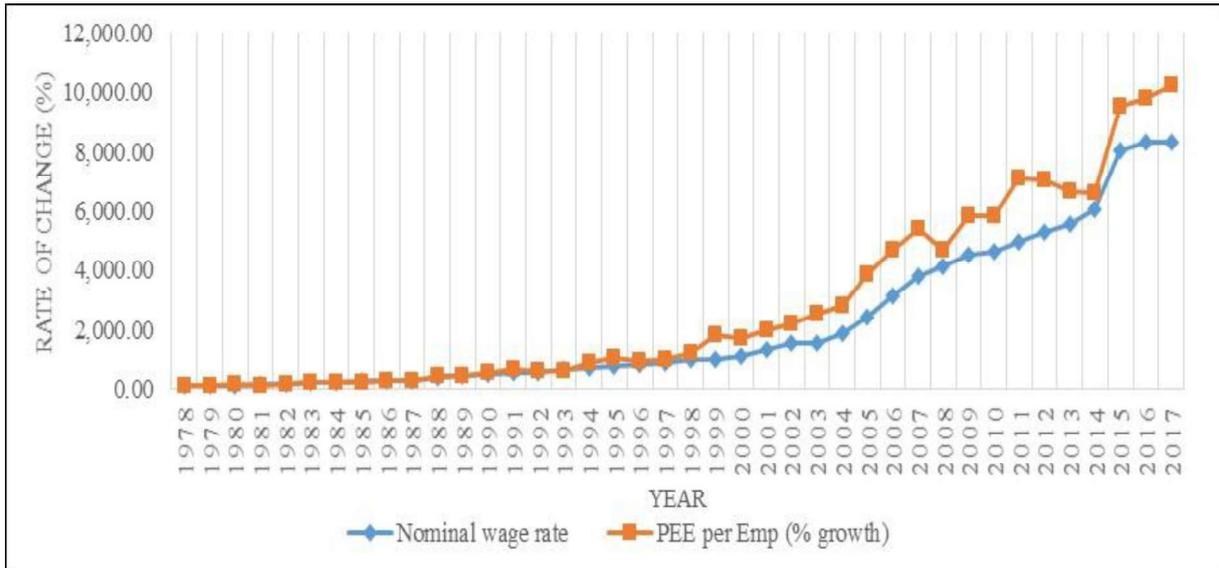


Figure 15. Nominal wage rate index and growth of per capita earnings of SLR (1978=100)

Effect of market fuel price

Figure 16 depicts the market diesel price in constant prices and total fuel consumption from 1977 to 2018. In real terms, diesel prices increased by 56.6 percent from Rs. 1.17 per liter in 1977 to Rs. 1.83 per liter in 2018 with an AAGR of 2.88 percent. The total fuel consumption of SLR increased significantly by an AAGR of 2.41 percent.

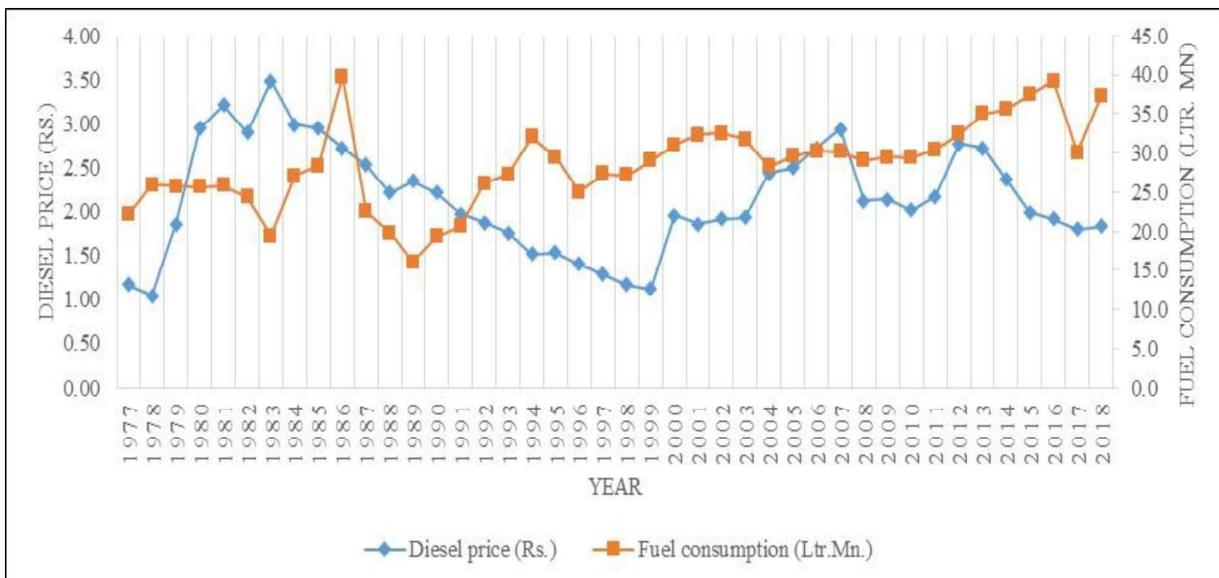


Figure16. Diesel price and total fuel consumption

Figure 17 shows the decline of fuel efficiency and increase of average fuel consumption of locomotives over the decades which led to a rapid escalation of fuel expenditure. The fuel efficiency decreased by 24 percent from 0.41 Km/Ltr to 0.31 Km/Ltr during the study period, whereas average fuel consumption increased by 32 percent from 243 Ltrs to 320 Ltrs per 100 Km. In 1986, fuel efficiency contracted by 32 percent up to 0.2 Km/ Ltr compared to the previous year reflecting the lowest value reported during the study period due to the highest

fuel consumption of 39.7 million liters during the year. This is mainly due to the availability of the highest number of defective locomotives with minimal efficiency caused by terrorist attacks.

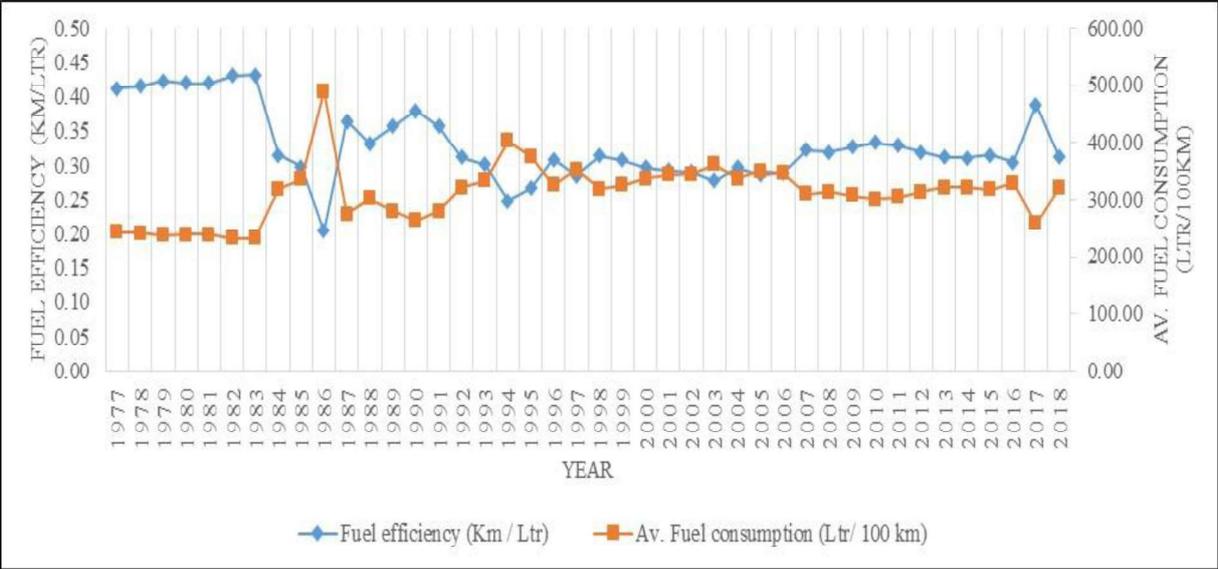


Figure 17. Fuel efficiency and average fuel consumption

As per Figure 16 and Figure 17, the increase in market fuel price, the decline of fuel efficiency, and the increase of average fuel consumption of locomotives contributed to the rapid increase in fuel expenditure during this period.

Effect of railway supply (output)

Figure 18 shows the SLR’s output (supply) variations from 1977 to 2018. The fluctuation of total operated train kilometers and locomotive kilometers are affected by the available resources of SLR, i.e., the total number of trains and locomotives available, length of operated rail track, and kilometers operated.



Figure 18. Output (supply) variables

As per Figure 18, railway supply (output) decreased during the 80s (1983, 1988, and 1989) mainly attributed to curtailed train services on Northern, Batticaloa, Trincomalee, and Talaimannar lines due to the effects of unfavourable security situation in the country. Both operated train kilometers and locomotive kilometers significantly increased in 1978 and 1990 due to normalised train operation due to less disruption by the external factors. Railway supply considerably increased after 2010 due to the extension of Northern and Coastal railway lines.

Further, Figure 18 shows that operated train kilometers of SLR increased (AAGR=0.9%) due to the rapid growth of passenger train kilometers (AAGR=2.0%) during this period, whereas freight train kilometers continually decreased (AAGR= -0.6%) over the years reflecting the government’s initiative to prioritise passenger transportation during this period.

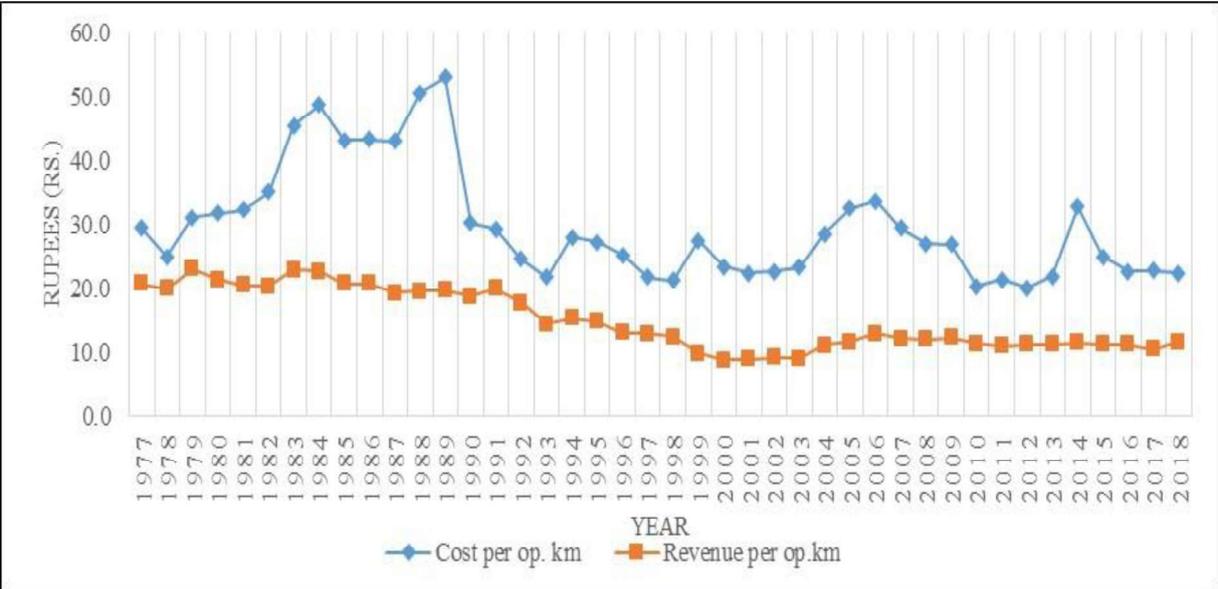


Figure 19. Revenue and cost per operated kilometers (in constant rupees)

Even though total supply increased during the study period, total revenue and recurrent expenditure compared to kilometers operated significantly decreased in real terms as depicted in Figure 19. The AAGR of total revenue per operated kilometer is -1.04 percent and the AAGR of total cost per operated kilometer is 0.9 percent during this period. This reveals that the operating loss of SLR is caused by a high revenue decrease over recurrent expenditure in constant prices.

5. CONCLUSION AND RECOMMENDATIONS

The study focused on the drivers of SLR’s financial performance by analysing the revenue and recurrent expenditure from 1977 to 2018. The study carried out a descriptive graphical analysis using historical secondary data in rail transport. The operating ratio continually increased reflecting the weak financial performance during the study period. Table 1 shows the summary of key results of the graphical analysis.

Table 1. Summary of key results

Variable	1977	2018	Growth Rate (%)	AAGR* (%)
Operating ratio (OR) %	142.4	194.0	36.2	-0.48
Total revenue (Rs. Mn.)**	188.4	134.5	-28.59	-0.35
Passenger revenue (Rs. Mn.)**	113.3	107.6	-4.99	0.49
Freight revenue (Rs. Mn.)**	50.5	7.6	-84.97	-3.12
Passenger kilometers (Mn.)	2,953.5	7,707.5	160.96	3.04
Number of Passengers (Mn.)	65.8	137.5	109.02	2.26
Freight ton kilometers (Mn.)	219.3	119.8	-45.39	-0.5
Freight tons carried (Mn.)	1.4	1.8	29.22	1.5
Passenger market share (from total motorised transport) %	8	4	-50	-1.15
Freight market share (from total motorised transport) %	23	1	-96	-6.21
Fare per passenger kilometer (FPK) (Rs.)**	0.04	0.01	-63.59	-1.90
Fare per ton kilometer (FTK) (Rs.)**	0.23	0.06	-72.49	-2.13
Recurrent expenditure (Rs. Mn.)**	268.2	260.9	-2.71	0.91
Fuel expenditure (Rs. Mn.)**	40.6	77.0	89.61	8.41
Market diesel price (Rs.)**	1.17	1.83	56.62	2.88
Fuel consumption (Liter) '000'	22,157	37,268	68.10	2.41
Operated train kilometers (Mn.)	9.1	11.6	27.7	0.9
Personal Employee Emoluments (PEE)** (Rs. Mn.)	131.1	164.7	25.66	1.41
Per capita earnings (PEE/Employees) (Rs.)**	5,136.06	11,065.2	115.44	3.1

*AAGR- Annual Average Growth Rate

**in constant prices

The results of revenue analysis show that the decrease in total revenue (in constant rupees) was mainly contributed by the rapid decrease of freight revenue over the passenger revenue during the study period. The significant increase in passenger traffic despite the contraction of freight traffic has not significantly contributed to the increase in total revenue due to the contraction of total rail market share for both passengers and freights. Further, Fare per Passenger Kilometer (FPK) and Fare per Ton Kilometer (FTK) continually decreased (in constant rupees), and this reveals passenger fares and freight rate revisions by the government during the study period has not fairly contributed to increasing railway earnings. The results of expenditure analysis show that the increase in recurrent expenditure was mainly due to the increase in fuel expenditure over the market fuel price (in real terms). Furthermore, the decline of fuel efficiency and increase of average fuel consumption of locomotives led to increasing in fuel expenditure. The rapid increase of per capita earnings of rail transport over the nominal wage rate of government employees shows a significant impact on personal employee emoluments (PEE) and recurrent expenditure. In summarising, the results show that diminishing market for freight transport over passenger transport, inadequate fare revisions and volume growth, rapid escalation of fuel expenditure following market fuel prices, and the increment of salaries and wages are the major revenue and cost drivers which contributed to the financial loss of SLR.

The continued financial loss of SLR could be minimised by taking policy decisions by the government for increasing total revenue and reducing recurrent expenditure. Since the

prevailing railway passenger fare structure is comparatively lesser than road transportation and fare revisions have not adequately contributed to revenue generation, reasonable fare revisions consistent with the market fuel price will contribute to minimising financial loss. Furthermore, the government should strive for improving freight transport share, giving priority to enhancing facilities and new infrastructure development instead of increasing freight rates. Since the fuel price changes highly affect total operating costs, the government should find the possibilities for electrification of railway lines which will lead to enhance passenger traffic. In addition, adopting new technologies and optimally utilising the available human resource would minimise the continual increase of PEE. More capital investments should be incurred on improving the efficiency of railway inputs in order to enhance the lost market share. Future research should be accomplished by focusing on operational aspects and perspectives of railway experts in order to find the validity and applicability of the research findings to curtail the continued financial loss of SLR.

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