Chapter – VII

<u>Operating Statistics</u>

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Statistics is a collection of data which is used in management functions like finance, production, marketing, service operations etc. In Indian Railways, statistics are collected and published annually in the form of Annual Statistical Statements. One of the popular and significant statistics used to measure the performance of Indian Railways is Operating Ratio. It reflects the overall financial performance and health of the organization. The data and indices that are related to train operations and used by operating department in its management and working are called Operating Statistics.

Operating Statistics can be divided based on the purpose it serves into the following three categories…

1. Traffic Output statistics – They measure the output of the train operations. The end service delivered by train operations is transportation of goods and people, which is measured by statistics like loading, no of passengers etc. The trends of these data also give an indication on the direction in which rail traffic is heading towards.

2. Operational tools – Some of the statistics are required for daily planning and monitoring of the train operations. They help in adjusting to actual field developments and take corrective action in order to achieve the optimum results.

3. Asset utilization statistics – They measure the efficiency of utilization of assets like locomotive, rolling stock, crew and path. The more the efficiency, the lesser will be the asset requirement and the lesser will be the cost incurred. These statistics also give us an idea on which of the assets become critical at a given point of time and helps management to focus on it for achieving overall efficiency.

Many statistics have multiple purposes and can fit into more than one of the above categories. They are used both for day to day working as well as long term decisions and policy making.

Traffic Output Statistics

Originating Loading is one of the important statistics in freight transportation. Loading in terms of number of wagons loaded is measured on a daily basis. With train loads becoming more common, this statistics is also measured in terms of number of rakes. As Railway is essentially a bulk commodity carrier, Originating Loading in tonnes is a better measure of the freight output. Since freight loading has close correlation with freight earnings which is the major part of overall railway earnings, Originating Loading is a closely monitored statistics at divisional, zonal and board level on a daily, monthly and annual basis. It is also collected and analyzed commodity wise, wagon type wise in order to monitor and take appropriate decisions and corrective measures.

Lead is the distance for which transportation has been done. It is the distance between loading and unloading point in case of freight; boarding and alighting point in case of passenger. Lead is affected by lot of factors that influence demand and supply. Longer lead traffic is generally favored by Railways because of the telescopic nature of freight and fare. Lead is also measured commodity wise and siding/station wise to understand the business / traffic patterns.

Originating Passenger in numbers is an important statistic in coaching operations. It is one of the significant measures targeted by Railways and is expected to continuously improve with the additional services and improvements made in coaching operations every year.

NTKM – Net Tonne Kilometer: A longer lead loading of same quantity is different from a shorter lead one. To have a better idea of the loading incorporating both quantity and distance of transportation, NTKM is calculated.

      NTKM = Loading in tonnes x Distance in km for which the load is moved

There are through running divisions / zones where originating loading is low. However, these units do operate loaded train movements. NTKM of a division / zone reflects these through load running also.

GTKM – Gross Tonne Kilometer: The tare weight of the wagons is not included in NTKM. Hence, empty rakes earn zero NTKM. However, the tare weights add to haulage load and the resultant impact on infrastructure like track and OHE. GTKM includes tare weight and is calculated as

      GTKM = Total weight of train in tonnes x Distance in km traveled by the train

A ratio of NTKM to GTKM reflects the proportion of empty running in the freight operations. GTKM is an important statistic used in planning for track maintenance and haulage capacity of locomotives. GTKM also closely corroborates with

electricity consumption in traction area and is used to decide on Maximum Demand projections to Electricity Boards, which is critical in keeping power costs under control.

Passenger KM includes the distance to which a passenger has travelled. Passenger-kilometers are measured as travel distance between origin and destination stations multiplied by the number of passengers traveled between them. Passenger KM when compared with Coach KM gives an indication about the occupancy ratio.

Throughput of a section is the total quantum of traffic which is transported over the section in a period of 24 hours.
   a. The passenger throughput could be measured in terms of number of passengers or passenger kms.
   b. The goods throughput may be expressed in terms of
         i. Number of wagons or trains
        ii. GTKM or NTKM.

In Railways, generally throughput refers to 'goods throughput'. Improving throughput can be achieved by either operational means like increased train length, increased trailing load etc. It can also be enhanced by improvements in infrastructure like track strength, improved axle load of wagons, increased carrying capacity of coaches and wagons etc. It can also be increased by implementing some of the freight incentive schemes like concessional fare in traditional empty flow direction.

Operating Tools

Divisional Wagon Balance (DWB) is the total number of wagons held by the division, including the ineffective and departmental. It indicates the status of freight train operations in a division. When there is a congestion or unusual change in demand for loading, the wagon balance of the division increases above the usual average or the railway board target. The wagon holding of a division is divided into effective and ineffective based on its fitness and availability for handling traffic. Effective wagon holding consists of Inwards (Terminal units) that need to be unloaded in the terminals of the division; Empties that need to be supplied for loading or handed over to adjoining divisions; Outwards (Foreign Loads) which need to be handed over to the division as per their destination routes.

Interchange is the number of wagons or trains handed over / taken over between two units like divisions or zones. This is forecasted and exchanged between divisions and zones to their adjoining units on a daily basis. Such forecasts help in controlling the traffic pattern and ensure the requirement of assets in a division for maintaining efficient train operations. Efficiency of train operations can be assessed through