

CASE STUDY STRATEGIC CAPACITY MANAGEMENT AT INDIAN RAILWAYS

Indian Railways (IR) plays an important role in supporting the economic activities of India. It operates one of the largest rail networks of the world. It achieved an amazing double-digit growth in freight revenue after 2004. One of the major contributors to the so-called turn-around in IR is increase in freight revenue. Capacity Management, modernization, and Professional Management practices are at the core of this achievement. Increased axle loading, reduced wagon turnaround, and market oriented tariffs and schemes were three important pillars of operating practices to achieve this. The first two helped to achieve a jump in IR's capacity to handle substantially higher volume of freight on-the-wheel at a shorter time for each turnaround resulting into free capacity for the next loading. Through enhanced axle load and reduction in turnaround time of wagons by 14%, the IR increased the available wagon capacity per day by 36%.

Increased Axle Load Capacity

Enhanced axle load increases the capacity of the same wagon. IR relaxed its four-decade old wagon loading norm of 20.3 tons per wagon to scale it up by a further increase in loading limit of another 8 tons. This immediately created an extra 64 million tons extra freight capacity per year. There were few criticisms on the apprehensions of safety compromise. However, technocrats in IR believe that due to a switch over from locomotive engine to electric and diesel engines, an additional 25-30% track load has been created. This is due to "hammer blow" phenomenon of locomotive engines, which no longer exists now. Moreover, now IR is using superior 60-kg rails, placed on concrete as compared to earlier 45-kg rails on wooden sleepers.

According to the then railways minister, freight earnings were increased through carrying increased tonnage by enhancement of loading limits. About 170 million tons of increase in loading capacity was achieved in three years starting from year 2004. This resulted into an increase in about 170 million tons of capacity, which exceeded the total incremental loading of the 1990s by 120%.

Increased Turnaround Time

To increase the turnaround time, following operational measures were taken: (i) faster train movement on the track, (ii) high speed of loading/unloading, (iii) increase the working hour of loading/unloading, (iv) mechanization of track work., (v) reduced number of level crossing, (vi) dedicated freight corridors, (vii) fast train examination, etc.,

Freight customers were given cash incentives to unload and load faster so as to decrease the turnaround time and thus an increase in the on-the-move time available for the rakes. Round the clock loading and unloading was facilitated, which was earlier during day time only. Freight Operations Information System (FOIS) helped to exercise strict control on the idle wagon capacity. Average wagon turnaround time very easily decreased from seven to five days. Theoretically, this itself is equivalent to creating an extra 30% capacity $\{100 \times [(7 - 5)/7]\}$.

Dedicated Freight Corridor

IR is working on its busiest route to create additional capacity by developing Dedicated Freight Corridors (DFCs). Around 1483 km of Western DFC is from JNPT in Mumbai to Tughlakabad and Dadri near Delhi. It would support the container transport requirements between the existing and emerging ports in Maharashtra and Gujarat and the northern part of India. Similarly, around 1806 km of Eastern DFC is planned Ludhiana in Punjab to Dankuni near Kolkata. DFCs will help IR to substantially increase its capacity as DFCs can handle double-stack containers of 25 ton axle load, resulting in about 25% increase in the cargo handling capacity. It can support a 1.5 km long train as compared to a conventional goods train of 650 m long. The speed of these high capacity goods trains can be as fast as 100 km per hour, as compared to current maximum of 75 km per hour. According to Shri Prakash, Advisor (Infrastructure),

Railway Board, "Once commissioned, DFC will reduce transit time between Delhi and Mumbai from 60 hours to 36 hours. It will also reduce the cost of operation".

The learning of IR's freight capacity management is simple, yet useful. Extra capacity can be created by removing inefficiencies, in-built redundancies, and over-precautions in the existing system. Faster speed in operation and delivery can result into extra capacity. Without adding extra resources like machines, manpower, wagon, etc.

Questions

1. Critically examine the IR turnaround story. What are the criticisms to its capacity expansion plans? How is capacity expansion related to safety? Will DFCs help IR to achieve these objectives? How?
2. Explain different approaches to capacity expansion in IR. What are the learning lessons for the Indian manufacturing and service industry?