

## SOME OUTPUT STUDIES IN PORT OPERATIONS \*

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This paper presents the results of certain output studies regarding the cargo-handling operations at Cochin, which is one of the seven Major Ports of India, during the year 1960-61.

The operations of unloading or loading of cargo from or into the vessels calling at a port may be said to form the basic operations of a port. The speed and efficiency with which these operations are done determine the turn-round time of the ships concerned, which term may be defined here as the length of time between the hour of berthing a vessel at the port and the hour of the turning-round of that vessel, after the completion of its work. The basic virtue of a port lies in reducing to a minimum the 'turn-round time' of vessels, thus setting them on the move again, which, after all, is their purpose. A steamer, it may be noted, earns only when it moves, and additional delays in ports mean a fall in their revenues and a compensatory rise in freights. Quicker turn-round means more steaming days for the vessels, and also more intensive utilisation of capacity for the port, with resulting larger turn-over of traffic and larger port revenues.

An attempt is made in the present study — (A) to find the average hourly out-turn of the various cargo-handling operations at the Port of Cochin under a variety of working conditions during the year 1960-61, as also to assess the influence of the various working conditions on the final speed of work, and to make a comparative study of the out-turn rates in cargo-handling at Cochin over the past few years; and (B) to study the average turn-round time of the vessels which worked at Cochin during 1960-61, together with a comparative study of the turn-round position at the Port over the past few years.

### *A. Cargo-handling operations : Rates of Out-turn :*

The results of the study of this aspect are presented in Tables 1 to 7. In general, these Tables study the average hourly out-turn per working hook (wharf-crane or ship's derrick) of the loading and unloading operations at the Port of Cochin — separately in the stream moorings and at the wharf-berths, during day-shifts and night-shifts, for the different types of cargo and for the different months of the year.

Some comments may be made about the data used in these Tables,

\* This paper forms part of a chapter in the author's Doctoral dissertation, 'An economic study of the Port of Cochin' submitted to the University of Poona.