# THE IMPACT OF COVID-19 IN SUPPLY CHAIN INDUSTRY
# AND
# PREDICTION OF FREIGHT VOLUME USING MACHINE LEARNING

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# Abstract

Governmental restrictions aspiring to slow down the spread of epidemic and pandemic outbreaks lead to impairments for economic operations, which impact transportation networks comprising the maritime, rail, air, and trucking industries. Witnessing a substantial increase in the number of infections in Sri Lanka, the authorities have imposed drastic restrictions on everyday life. Resulting panic buying and increasing home consumption had versatile impacts on fright volume and freight capacity dynamics in logistics and supply chain. Due to the lack of prior research on the effects of COVID-19 on freight volume in logistics and supply chain, as well as resulting implications, this article aspires to shed light on the phenomenon of changing volume and capacity dynamics in Ocean freight movement haulage. After analysing the volume of 55,959 shipment wise data in the timeframe of 2018 to 2021, a freight volume growth rate expressing the difference of real and predicted volume was identified using machine learning models. This ratio was examined concerning the number of COVID-19 infections per day and deaths per day due to the pandemic. The results of this study prove that the there is a significant impact from Covid-19 cases and deaths on the volume movement. The contribution of this paper is highly relevant to assess the impact of a possibly occurring COVID-19 virus infection waves. Findings derived from the machine learning models determine the volume prediction, which indicates that the discoveries made will contribute on decision making of freight forwarder on rate negotiation and container movement.

Key Words: Covid-19, Freight, Volume, Logistics, Machine Learning, Prediction