ABSTRACT
Currently, the need for premium rate is increasing due to the increasing number of private motor vehicles. The high level of premium demand frequently causes shortages in some areas in Indonesia, including the south area of East Java. Lack of stock and the complexity of the supply chain deliver a major cause of the scarcity of fuel. Calendar variations such as the number of holiday and the presence of a feast day, especially the Eid holiday is one indicator of determining the monthly needs of premium. Forecasting result using ARIMAX with the influence of calendar variations is selected as the best model, with the RMSE value of 1583.228. The optimum probabilistic inventory model as the main foundation of supply chain concepts gives a planning total cost for August as the month of Eid in 2012 amounted to Rp139,778,602,550,00. Optimum order quantity for the planning period is 4982 kL with reorder point of 914 kL. The frequency of bookings must be made as many as 7 times.

Keywords: Premium, Calendar variations, ARIMAX, Probabilistic inventory model