DISCRETE TIME MARKOV CHAIN APPROXIMATION IN HOSPITAL BEDS REQUIREMENT PLANNING

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Abstract

Hospital is health care institution that organizes a complete personal health services that provide inpatient, outpatient and emergency services. Planning of hospital inventory systems, especially in the management of the number of beds in the inpatient care is needed to optimalization hospital inventory utilization. If the number of beds is insufficient, it will cause the patient are denied and cause hospital waiting lists getting longer and make the level of patient satisfaction has decreased. Conversely, if the number of beds available in excess of patients who came in, it was a waste. Discrete time Markov chain (DTMC) approximation is a method that can be used in inpatient inventory planning. This method produce forecasting result better than forecasting result that use Box-Jenkins method, because mean absolute percentage error (MAPE) of DTMC’s forecasting result is 21.982% smaller than MAPE of forecasting using Box-Jenkins method that amounted 26.444%.

Keywords: Markov chain, transient inpatient inventory, Box-Jenkins methods