# Analyzing utility of waiting lines: a case study

U.A.G.W.Weerarathne[1], R.A.B.Abeygunawardena[2]

Queuing systems play a major role in most of commercial activities. Queues may occur due to lack of resources and hence queueing analysis depicts great importance to maintain balance between the available resources and the outside demands. Banks deal with waiting lines in their daily routine due to slow service, inappropriate number of servers, customers' varying requirements and etc. This study is concentrated on the utility of existing queueing system of a state bank in Kelaniya division.

Formerly a survey was carried out to know whether the customers are satisfied with the existing queueing system. The results of the survey highlighted that the customers of the bank are not satisfied about the queuing system in the bank and however they are satisfied about the overall service provided. Therefore, it is important to analyze the utility of the existing queueing system.

The current queueing system of the study is acting as a single channel waiting line system. Number of arrivals per minute and number of departures after getting service per minute was recorded for main 3 counters and total data set consist of 489 records. The data showed Poisson arrivals and exponential service times for the counters. The scenario was analyzed using queueing theory approaches with M/ M/ 1 queueing models regardless of customers' queueing behaviors and service requirements. The utilization waiting time in each queue, and the average number of customers waiting in the queue were found in the study. The findings intended that, two waiting lines out of three lines considered in the study were very busy and the third queue was the effective line. But the effective queue was also time consuming. i.e. the customers who ever joins the waiting line would have to wait nearly 13 minutes in the queue and 15 minutes in the system implying that the existing queueing system is not appropriate to handle the congestion occur in the bank for monetary transactions.

*Key words: Single channel waiting line system, M/ M/ 1 queueing models, Customers' queueing behaviors, Queueing system*

1 Department of Statistics and Computer Science, University of Kelaniya, Sri Lanka. gayanthi.weerarathne@gmail.com

2 Department of Statistics, University of Colombo, Sri Lanka. rab_abey@yahoo.com