Developing the Existing Queuing System for the Banking Sector Using Queuing Simulations

By

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DECLAREATION

I do hereby declare that the work reported in thesis was exclusively carried out by me under the supervision of Mr. T.M.J.A Cooray, Senior lecturer in the department of Mathematics, University of Moratuwa. It describes the results of my own independent research except where due reference has been made in the text. No part of this project report has been submitted earlier or concurrency for any other degree.

Date: **…………………**   **…………………………..**

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Date**: …………………**   **…………………………..**

                                                  Project supervisor

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DEDICATION

Specially dedicate to

My loving parents, husband and sisters

ABSTRACT

Waiting lines occur in many business operations as well as in everyday life. Most service systems, such as fast food restaurants, Banks, gasoline stations, and technical support telephone hotlines involve customer waiting. In these systems customers arrive at random times and service times are rarely predictable.

The important issue in designing such systems involves the tradeoff between customer waiting time and system cost, usually determined by number of servers. The analysis of waiting lines, called queuing theory, applies to any situations which customers arrive to the system wait and receive service.

The People's Bank is one of the important governmental banks that plays an important role in the Sri Lankan economy. The customers dealing with servers of general transaction section of Peoples Bank in metropolitan areas suffer and complain from the long times they spend in the bank to acquire their needed service. This happens especially in specific days in each week. This problem was the main motive to perform this study. However, more queuing problems in the bank's branch have been discovered through the study. The main objectives of the study are to investigate the services delivery system at the people's Bank in metropolitan areas, and to propose a more efficient system.

Analytical methods and simulation methods are used to analyze the queuing systems. Simulation analysis has been used to model the existing queuing system and to enhance the system by using computer simulations of Arena 12.0 statistical software. As the conclusion of this project new working schedule for counters in different days of weeks are presented and find out how arrangement of queues should change.

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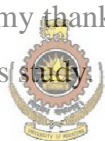
Finally I must express my indebtedness for my loving parents, my husband and my sisters for their inspiration and the sacrifices they have done through my university carrier.

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ABBREVIATIONS

Abbreviations	Description
ATM	Any Time Money
AO	Accounts opening section
CC	Cheques clearing section
CA	Current accounts section
C1	Cashier counter 01
C2	Cashier counter 02
C3	Cashier counter 03
C4	Cashier counter 04
FIFO	First In First Out
IS	Inquiries section
OO	Other official works section
S1	The slips filling table 01
S2	The slips filling table 02
L_S	Average number waiting in the system
L_q	Average number waiting in the queue
W_S	Average time in the system
W_q	Average time in the queue
ρ	Utilization factor
P_0	Probability the system is idle