Scientific Journal of Impact Factor (SJIF): 4.72

e-ISSN (O): 2348-4470
p-ISSN (P): 2348-6406

International Journal of Advance Engineering and Research Development

Volume 5, Issue 01, January -2018

Queung Models in Banking System

Rajendra B. Patel

Assistant Professor, R.R.Mehta Science and Commerce College, Palanpur, Gujarat

Abstract : *It is very tough job to handle queue in banking system. The main question is customer satisfaction with system optimization. In some case if we look to one aspect the other get violated and vice a versa. We have proposed the use of non orthodox queuing system with optimization of the system, which also leads to customer satisfaction in respect of less waiting time in the system.*

INTRODUCTION

In banking system, though it is online business and service in majority case, but still customers required to visit banks for getting some services, it may be because the required services are not available online or the customer is not using it due to many reasons. But the main problem is to manage the customers at bank service counters. Many banks are doing research to optimize their operations which resulting into minimize the waiting time for the customers, ultimately lead to customer satisfaction. [1,2,3]

Today many banks use the standard queueing methods for the customer service. They issue token to the customer for specific service. The customer can obtain the token as per required service. In our present research we have focused on banking queues and different queueing algorithms the are used in banks to serve the customers. We have tried to identify the homogenous wat that analyze the queue status and take decisions about which customer to serve by using the appropriate scheduling algorithm.

THE QUEUING SYSTEM

The simplest queuing system can be defined as : one or more servers providing the service to the customers. The customers arrive in the service, go to the queue, takes service and exit from the system. The population of the customers may be considered as finite or infinite as per customer's nature. The customers enter into the system in random fashion. Customers waiting for the service are considered as the queue. The length of such queue may be finite or infinite. The service may be considered as the request made by the customer. Now the scheduling algorithm permits to manage queue in the way that server can choose the next customer from the queue as per the service time for the request of the customers.

Most common scheduling algorithms are :

1.FCFS or First Come First Serve : The customer enters first into the system get served first.

2.SIRO or Serve In Random Order : In this system customers are selected at random for the service. Each customer has same probability of selection for service at any time irrespective of their arrival in the system.

3.PRI or Priority Service : According to some external forces, some customers are considered as the priority customers, they are served first with highest priority.

4.SPF or Shortest Processed First : In this algorithm the service time required for all the customers are known in prior. According to the service time the shortest time customer are selected first for service.

In queueing models the following are some most commonly used basic models

1.Single Queue (SQ)Model : Each customers has to wait in the single queue until they reach to the server.

2.Multiple Queue (MQ) Model : In such model there are more than one queue and customer can go to any of the queue of their choice.

3.Diffuse Queue (DQ) : It is the special kind of single queue model, the difference is that in DQ as soon as the customer enters the system they get a token and they have to monitor the token number from anywhere.

@IJAERD-2018, All rights Reserved

THE MODEL USED IN STUDY

We have used the DQ system with FCFS and SIRO as the scheduling algorithm for selecting the next customer for service. The selection of the scheduling algorithm depends on the testing results to achieve the minimum waiting time for all the customers present in the system. The components of the model that we have used are as following

1.Customer Area : Here customers enter the system and obtain the token and wait until their token number is being announced or displayed.

2.Queueing Area : Here the system uses the queueing algorithm that is chosen by the testing area to select the next customer.

3.Testing Area : Here the system test s the status of the servers according to the existing algorithm in the database and compares all the results for the expected waiting time and response time and then select the best result for the customer.

4.Scheduling Algorithm Database Area : Here all the information of the customers are stored, such as the scheduling algorithm, testing results, customer number .

5.Service Area : This is actual server, where customer ultimately have to go. It is also described as service counters.

RESULTS AND COMPARISION

The actual test of the system is being made on a routine day of the bank in one city of the Gujarat State in India. We have performed the experiment and develop the database for the two standard scheduling algorithms. The comparison is done between the new system and the ordinary system (FCFS) that is used in general. As per real life situation constraints, we have confined our study the most common three bank operations. 1. Account Opening, 2. Balance Enquiry and 3. Cash Transaction. With prior observation and experience of the banking system the times to all these services are pre fixed as 15, 3 and 5 minutes respectively. We have recorded the following customer intake of the system.

Table 1
Customer Intake of the System

Customer Number	Arrival Time	Service Time	Service Required
01	0	3	B.E.
02	2	5	C.T.
03	6	15	A.O.
04	7	5	C.T.
05	12	5	C.T.
06	16	3	B.E.
07	19	5	C.T.
08	22	5	C.T.
09	27	3	B.E.
10	31	3	B.E.
11	35	5	C.T.
12	37	15	A.O.
13	39	5	C.T.
14	45	3	B.E.
15	47	5	C.T.
16	49	3	B.E.
17	53	5	C.T.
18	56	3	B.E.
19	64	5	C.T.
20	69	5	C.T.

A.O. : Account Opening, B.E. : Balance Enquiry
C.T. : Cash Transaction.

We have break the whole system into the group of 5 customers. Then applied the both FCFS and SIRO algorithm for scheduling. The results are following.

@IJAERD-2018, All rights Reserved

Table 2
Waiting Time under FCFS

Customer Number	Waiting Time	Customer Number	Waiting Time
01	0	11	17
02	1	12	30
03	12	13	33
04	16	14	30
05	16	15	33
06	15	16	34
07	17	17	35
08	19	18	35
09	17	19	32
10	16	20	32

Table 3 : Waiting Time Under SIRO (SIRO in group of five customers each)

Customer No.	Service Order	Waiting Time	Customer No.	Service Order	Waiting Time
01	1	0	11	12	17
02	2	1	12	15	30
03	5	11	13	13	33
04	3	13	14	11	30
05	4	16	15	14	33
06	6	15	16	16	34
07	9	17	17	18	35
08	10	19	18	17	35
09	7	17	19	19	32
10	8	16	20	20	32

Considering the above application the average waiting time for each customer in FCFS is 22 minutes where as in SIRO the average waiting time for each customer is 18.30 minutes.

CONCLUSION

It is very much important that the system is optimised as well as the customers are satisfied with fair policy. Here we have used the queueing system with some modification into the customer selection algorithm. It will be more helpful if we can include some more parameters into the account.

REFERENCES

[1]B. Goluby, and R. Preston McAfeez, “Firms, queues, and coffee breaks: A flow model of corporate activity with delays”, Springer-Verlag, vol.15, pp. 59-89, March 2011.

[2]A. Mobarek, ” E-banking practices and customer satisfaction- a case study in botswana”, 20th Australasian Finance & Banking Conference, 2007.

[3]O. Luštšik, “E-banking in estonia: Reasons and benefits of the rapid growth”, University of Tartu, kroon and economy, vol. 3, pp.24-36, 2003.

[4] K. Sanjay, Bose, “An introduction to queuing systems”, Springer, 2002

[5]F. Mohamad, “Front desk customer service for queue management system”, Master Thesis, University Malaysia Pahang, November, 2007.

[6] A. Allen, “Probability, statistics, and queuing theory with computer science applications”, Academic Press Inc., Second Edition, 1990.

[7] A. Willig, “A short introduction to queuing theory”, Technical University Berlin, Telecommunication Networks Group Sekr. FT 5-2, Berlin, July 21, 1999.

@IJAERD-2018, All rights Reserved