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VIRTUAL TOKEN ISSUING SYSTEM WITH SMS NOTIFICATION IN BANKING MANAGEMENT SYSTEM

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ABSTRACT: Now, many people are waiting in a bank for their few minute transactions unnecessarily for long time. Computers are used to perform all kind of transactions take place in a banking system. The ultimate aim of using computer is spoiled while the people wasting their time in the bank. This research work focus on how to reduce the waiting time of customer by using a new proposed methodology. In this method customer waiting time is reduced optimally by altering the present system slightly.

Keywords:

Token, virtual Queue, waiting time, operational cost estimation, Virtual Queue Management System.

INTRODUCTION

In today's banking system, tokens are issued by the machine in the bank's place. The customers have to go to bank and get the printed tokens in the bank premises. They should wait in the bank for long time in the queue [1]. They will call one by one using the speaker by pressing the token number in their system. The customer should wait in the bank till their token will be called. In this existing system the valuable time of their customer is totally wasted. This proposed system, resolve this problem through token-based admission control policy that implements the reservation scheme [2]. Here, on-line scheduling algorithm assign requests based on the type of the customer transaction. Pre-booking appointments by phone are done through a virtual queue management system (VQMS) and ensure the accuracy what the bank and customer expects. It helps to reduce waiting times for customers, and improves customer service levels [3]. Customers can easily join into the virtual queues through their mobile system. The queue management system will then send an SMS and confirm their entry into virtual queuing system by a queue number and also the approximate time required for their work. That time will be sent to the customer when they send a request message to the VQMS. The time will be in diminishing order every time the customer sends a request message. The customer has to decide the travel time to reach the bank. The virtual QMS is wholly customizable [4]. So, the customer can fix the call time by considering his travel time. The customer will receive SMS notifications from the queuing system when they are very close to the front of the line. This will ensure they can arrive at the branch just in time, when their token number is about to be called. The mobile application and bank's software are tightly integrated together to access data accurately. This queuing solution can be hosted

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on the cloud, or can be implemented by using local server [5]. No one needs to wait in a crowded area during the COVID 19 period. The bank can also do their work with minimum number of floating customers. That is why safe distancing is also maintained by implementing the proposed system.

LITERATURE REVIEW

Md. Nasir Uddin et.al. (2016)

In this paper a new automated queue management system was developed for the welfare of customer to handle effectively. This automated system organizes the queue and find the customer who come first for next service. It was developed to manage banking queuing system using the Intel Galileo Microcontroller with Arduino software environment. System performance is also evaluated in different environment.

Sujit Pasalkar et. al (2016)

In this research work, a new system was created for queue control management with notification. The customers have to spend for long hours to go round in the queue. This method designed to provide online tokens for user via Smartphone applications. Here the server played a main role. In this system the data collected from place of registered user using mobile application and then server will process the collected of data and intimate to the customer about their waiting time with token number.

Ndung'u Michael Ngugi et.al. (2018)

In this work the waiting time of customer and operational cost of customers are considered. The main issue of any queuing system used in a organization is waiting in a line for long time. Every organization wants to minimize the waiting time and optimize the operational cost due to the waiting time of customer. The effective queuing management system will improve the customer satisfaction. The economic situation of an organization depends on the customer satisfaction. So, in this work the drawbacks of existing queue management system are analyzed and provided the methodology for virtual queue management system.

Supriya Burungale1 et.al (2018)

In this research article the need of effective queuing management system was discussed. Every day lot of people is coming for their treatment. This makes more crowds in the hospitals and creates problems due to the maintenance of queuing system. The current system followed in hospital is not suitable to manage the effectively. So, they proposed system predict the patients' waiting time and provide the solution to minimize the patients' waiting time.

Chetan Sharma et. al. (2020)

In this research work, the idea of virtual queuing system was given to automate the manual queuing system using cloud computing concepts. In this mobile application is used to connect the user and the cloud. This application saves the time the customers' time because they can enter into the queuing system from their place itself without wasting their valuable time. In that system notifications also will be given to the existing users.

RESEARCH METHODOLOGY

The following Figure-1 describes the logic of the proposed system. This system is used to assign the token to the customer while they run their mobile application.

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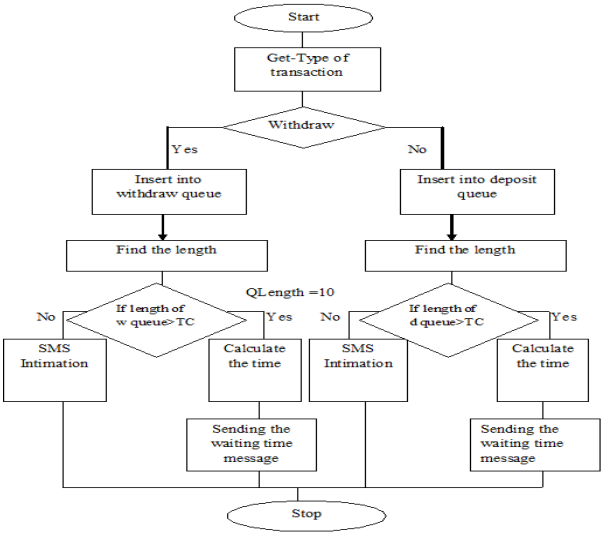

Figure-1: Bank Virtual Queue Management

The following Figure-2 describes the logic of proposed system. This system is used to assign the token to the customer while they run their mobile application.

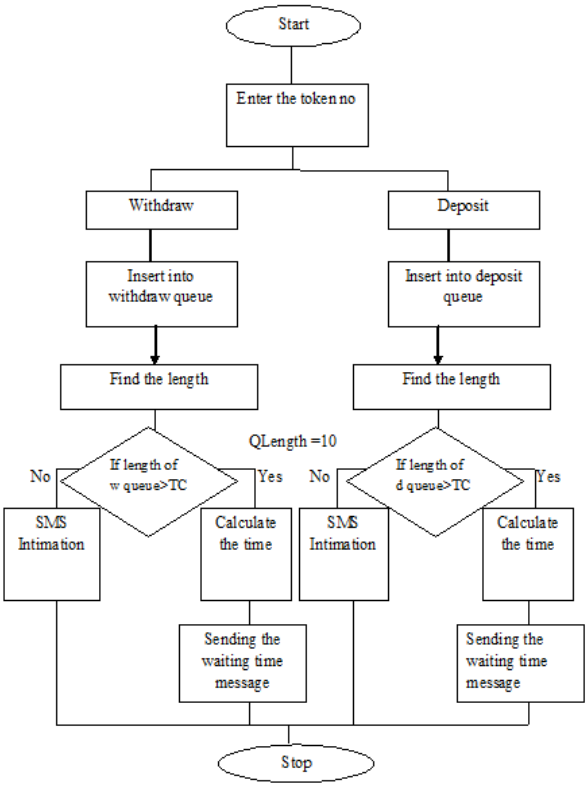

Figure-2: Find the token status

RESULTS AND DISCUSSION

The following Table-1 shows the loss of amount for two hours waiting time to the civil workers in the exiting token distribution system.

Table-1: Before the implementation of Virtual Token

S.No	Nature of Job	Salary per day	Salary per hour	Loss for 2 hours waiting time
1	Masson	1000	125	250
2	Carpenter	900	112.50	225
3	Painter	800	100	200

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4	Helper	500	62.50	125

The following Table-2 shows the loss of amount for 10 minute waiting time to the civil workers while implementing the proposed virtual token management system.

Table-1: After the implementation of Virtual Token

S.No	Nature of Job	Salary per day	Salary per hour	Loss for 10 Min waiting time
1	Masson	1000	125	12.5
2	Carpenter	900	112.50	11.25
3	Painter	800	100	10
4	Helper	500	62.50	6.25

The following Table-3 compares loss of amount in the existing and proposed system.

Tabel 3: Loss-Comparison

S.No	Nature of Job	Loss for 2 hours waiting time	Loss for 10 Min waiting time
1	Masson	250	12.5
2	Carpenter	225	11.25
3	Painter	200	10
4	Helper	125	6.25
Total loss		800	40
Sample saving amount		760	

The following Figure-1 shows the graphical representation of the efficacy of proposed system in the banking system

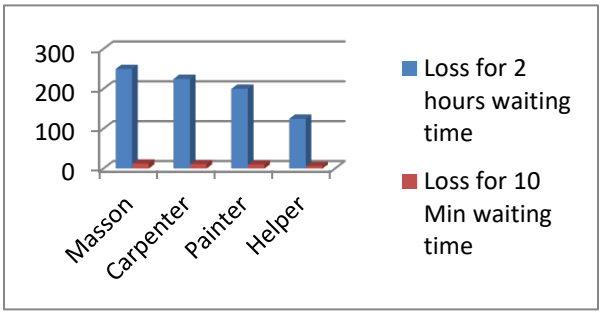

Figure 1: Comparison chart

The above Figure-1 clearly compares the cost effectiveness in existing and proposed system. The loss incurred in the existing system is totally reduced in the ratio of 20:1 with respect to existing and proposed system. For this sample dataset 95% cost is saved by introducing the new system.

Benefits of using the proposed system

- Reduce the cost by eliminating large waiting time for customer
- Reduce the maintenance cost of the Bank due to water, electricity expenses
- Increase the revenue of individual person
- Improve customer satisfaction
- Social distancing
- Tracking their position digitally in customer place easily

CONCLUSION

Through the implementation of proposed virtual queue management system the bank can assign token easily and effectively. This new system will definitely provide customer satisfaction fully. The management can reduce the maintenance cost and provide enough space for their customers during the pandemic covid 19 seasons. Thus this system will be fruitful to both customers and bank administration.

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