

MANAGING QUEUE TO ENHANCE CUSTOMER SATISFACTION IN NIGERIAN BANKING INDUSTRY

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Abstract

Customer satisfaction can be considered the essence of success in today's highly competitive world of banking business. Queuing is the process of moving customers from a central location, such as a waiting area to a specific place of service such as workstation, (n recent time, there has emerged an increased national awareness of the need to reduce customer congestion in an organization particularly in the service oriented organizations such as hotels, hospitals, banks, airports, etc. Since the demand for banks' service will continue to rise, customer demands management via queue management. This has become an increasingly important means of enhancing customer satisfaction in the banking industry. The intent of this paper is to examine the current operating capacity of the bank and the extent to which queuing management will reduce customer waiting period in the service oriented organization. Data for this study were collected through primary and secondary sources. The primary source is the first hand data collected through personal observation assessing the queuing problem at the banking hall of the case study. The findings of the study revealed that there is no correlation between the arrival rate and the service rate that led to congestion problem in the system. The paper therefore recommended that queuing theory could be used to enhance customer satisfaction and solve related problems associated with congestion in the Nigerian Banking Industry.

Introduction

The most important measure of success in marketing of bank service is customer satisfaction. Customer satisfaction is important theoretical as well as practical issue for most marketers and consumer researchers (Fournier and Mick, 1999). Queuing theory deals with problems that involve queuing (or waiting). Queues are common every-day experience. Queues form simply because resources are limited. In fact it makes economic sense to have queues. Queuing affect our personal lives and also influence operation of business. Queues happen when the scheduled time of arrival of someone needing a service varies from affixed schedule.

It will be very expensive for an organization to get rid of queue by increasing service capacity. However, it will be appropriate to strike a balance between the costs involved in waiting for the desired service capacity. Congestion control is a process by which networks use feed back to adjust the influx of data such that the customer's Quality of Service (QOS) requirements are met while simultaneously attempting to maximize the utilization of the network's resources. Networks that attempt to deliver more data than their capacity will experience congestion, leading to undesirable data loss, excessive delays, or both (Kenneth, Charles and Panos, 2002).

It is difficult for the service providers to store their output, capacity planning and control, and thus present a set of problems. However, service providers make forecasts of their expected average, level of demand; they find it uneasy to forecast the exact level of customers that will arrive at a particular period. Due to this probabilistic arrival and processing time, it is glaring that the rate at which the customer arrive will not match the existing organization facility and therefore the organization will find it difficult to cope.

From the time of birth (usually involving an approximately 9-month period from the moment of conception) until death (an entire life-time - whether brief, extensive or in between) and at main moments along the way human beings often find themselves waiting

for things, events, conditions, etc. A major topic of Applied Mathematics that deals with this phenomenon of waiting is called Queuing Theory. Using the word "Queue", which is more common in British than American English and means "a line up" or "to form a line", a closely reasoned body of mathematical theory has been developed to describe this common human activity - theory applicable to normal economic activity.

Realistic applications can be made to the phenomena of customers awaiting the delivery of goods/services, as well as to goods-in-process coming to be finished goods.

In some occasions when customers arrive less frequently than average and also require lower than average processing time, some of the servers in the system might be idle. In a situation where there is correlation between the processing capability and arrival rate, both queues and idle time will occur.

However, when the service providers are very small, queues will also form. In a situation where customers are dissatisfied with their long period of waiting on the queues however, the utilization level of the service provider will be high. However where the service providers are many the levels of queues will be reduced although the utility of the sellers will be low. These therefore call for a trade-off between customers' waiting time and system utilization in the bank.

The objectives of the study are:

- i. To examine the application of queuing theory in the banking industry,
- ii. To find solution to customer long waiting period in the selected bank and,
- iii. Finally to assist the bank in taking decision via queuing theory.

Literature Review

Queuing Theory arises from the use of powerful mathematical analysis to theoretically describe production processes along with statistical/probabilistic techniques to account for varying dynamic patterns within the stages of a productive process. The problem to be met - that occasioned the development of such theory - is simply entitled "congestion", what happens when a system does not operate smoothly or efficiently. Although there has been extensive research into bank marketing environment (Lisanin, 1998; Gardener, 1994; and Meyers & Mullins, 2000), there is little research on customer satisfaction.

A queuing system is the one in which we observe alternating periods of congestion i.e. waiting lines, and idleness of the service facility due to limited capacity and randomness in the arrival of units and the time required to service them (Devitsiotis, 1981).

Once there are queues customers have no option than to wait. The time lost during the waiting period is very expensive if one is to quantify this in monetary term. There is a large number of operation systems especially in the service industry, are characterized by considerable randomness both in the pattern of unit arriving for service and in the time required to receive it.

The practical purpose of Queuing Theory is to provide examination tools for systems composed of Queues leading to Service Facilities, so that the systems may be made more efficient. Queuing Theory deals mathematically with both the regularities and irregularities of such systems - ultimately identifying occurrences of congestion (resulting from irregularities) and offering avenues for improving efficiency, as well as producing specific numerical data for further application. Service systems are usually classified in terms of their number of channels and number of phases. According to Buffa (1972) he highlighted four basic structures of waiting line situations that described the general conditions of the servicing facility. The simplest situation is the arriving units from a single line to be serviced by a single processing facility, for instance, one-man barbershop. This is called the single channel or single-phase case.

Asmussen (2003) asserts that "queuing theory is a branch of probability theory that has been used regarding serving customer...". While Baccelli and Bremaud (2002) further argued that queuing theory is an operational research techniques used in a system often with the objective of balancing the number of servers with the length of queues.

Cook and Russel (1981) described queuing as a branch of management science that enables the analyst to describe the behaviour of queuing system. They argued further that the occasions for applying queuing theory are numerous and varied. When people who design systems that contain queues use queuing theory or digital simulation to estimate expected waiting times, queue lengths, and so on, members of the queue, (or calling units) spent less time in line.

If the number of processing stations is increased (two or more cashiers) but still draw on the waiting line, we have a multiple-channel, single-phase case this is because customers can be serviced by any one of the cashiers. A multi-channel, multiple-phase case might be illustrated by two or more parallel production lines.

Customer satisfaction is widely recognized as the key influence in the formation of customers' future purchase intention (Taylor and Baker, 1994). Satisfied customers are likely to tell others about their favourable experiences and thus engage in positive word of mouth advertising (File and Prince, 1992). Dissatisfied customers, on the other hand, are likely to switch brands and engage in negative word of mouth advertising. Furthermore, behaviour such as repeat purchase and word of mouth directly affect the viability and profitability of a firm (Dabholkar, Thorpe, and Rentz, 1996).

Elements of Queuing System

All queuing systems can be broken down into individual sub-systems consisting of entities queuing for some activity'. This individual sub-system are dealing with customer queuing for service. To analyze this sub-system one needs information relating to:

Arrival process:

- How customers arrive e.g. single or in groups
- How arrivals are distributed in time (.e.g. what is the probability distribution of time between successive arrivals (the inter-arrival time distribution))
- Whether there is a finite population of customers or (effectively) an infinite number. The simplest arrival process is one where we have completely regular arrivals (.i.e. the same constant time interval between successive arrivals). A Poisson stream of arrivals corresponds to arrivals at random. In a Poisson stream successive customer's arrivals, which independently are exponentially distributed. The Poisson stream is important, as it is a convenient mathematical model of many' real life queuing systems and is described by a single parameter- the average arrival rate. Other important arrival processes are scheduled arrivals; batch arrivals; and time dependent arrival rate (i.e. the arrival rate varies according to the time of day).

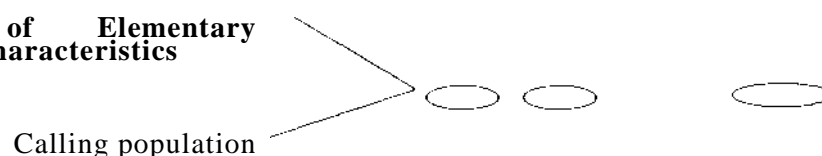
Service mechanism:

- A description of the resources needed for the service to begin.
 - How long the service will take (the service time distribution)
 - The number of servers available
 - Whether the servers are in service (each server has a separate queue) or in parallel (one queue for all servers).
 - Whether preemption is allowed (a server can stop processing a customer to deal with another "emergency" customer).
- Assuming that the service times for customers are independent and do not depend upon the arrival process is common. Another common assumption about service times is that they are exponentially distributed.

Queue characteristic:

- How, from the set customers waiting for service, do we choose the one to be served next (.e.g. FIFO (first in first out) this is also known as FCFS (first come first served); LIFO (last in first out).

Sample of Elementary Queuing Characteristics



Methodology

The model for this study is queuing model in case of multiple service stations. In this case there are more than one service point (c) and there is one waiting line. The service points have relatively the same service rate. The number of units i.e. customers in the system at a particular point is represented by N and this can assume any of the following values;

If $n < c$, this is an indication that there is no queue, it therefore means that all arrivals are being served. But in a situation where $n > c$ in this case queue is established / formed. The former is an indication that problem did not exist while the latter represents problem.

The formula in such situation is shown below.

a. Expected number of units in the system.

$$E(n) = \frac{\lambda \mu (\lambda / \mu)^c}{(c-1)! (c\mu - \lambda)^2} \cdot P_0 + \frac{\lambda}{\mu}$$

b. expected number of units in the queue is

$$E(n_q) = \frac{\lambda \mu (\lambda / \mu)^c}{(c-1)! (c\mu - \lambda)^2} \cdot P_0$$

c. the average time in the queue of an arrival is

$$E(n) = \frac{\mu (\lambda / \mu)^c}{(c-1)! (c\mu - \lambda)^2} \cdot P_0$$

d. average time of arrival spends in the system is

$$E(n) = \frac{\mu (\lambda / \mu)^c}{(c-1)! (c\mu - \lambda)^2} \cdot P_0 + \frac{1}{\mu}$$

The major sources of data for this investigation are both primary and secondary data. The primary data were collected through personal observation at the banking hall and personal interview with staff of Trade Bank Nigeria, Pic. Unity Road Branch, Ilorin, Kwara State, Nigeria. This is supplemented with the secondary data.

It was observed that customers are around the premises of the bank as early as 7.30 a.m. and the staff commences operation by 8.00 a.m. and the service commences immediately. The service operation period is usually varied from one customer to another. This is because customers have different missions and assignments.

Data Presentation and Analysis

This section presents the analysis of result as gathered by the researcher. These are presented in form of tables. For the fact that each cashier has a different group of customers to attend to, each was considered as a single channel system. The study only covers only one cashier since each of the cashiers has the same characteristics both in style and mode of operation.

Sample of Customers' Arrival at the Bank

| Time Period | Time for Each Arrival (hr:mins) | No. of Arrival During | Inter Arrival for Each Arrival (mins) |
|--------------|--|-----------------------|---------------------------------------|
| 8.00-8.30 | 8.00, 8.02, 8.05, 8.10, 8.11, 8.15, 8.20, 8.23, 8.26. | 9 | 10,2,3,5,1,4,5,3,3. |
| 8.30-9.00 | 8.31,8.33,8.34,8.36,8.39,8.40,8.48. | 7 | 5, 2, 1,2, 3, 1, 8. |
| 9.00-9.300 | 9.01, 9.03, 9.06, 9.07, 9.10, 9.12, 9.15, 9.20, 9.25, 9.27. | 10 | 13,2,3,1,3,2,3,5,5,2. |
| 9.30-10.00 | 9.35, 9.37, 9.39, 9.42, 9.45, 9.49. | 6 | 7, 2, 2, 3,3,4. |
| 10.00-10.30 | 10.05, 10.09, 10.12, 10.15, 10.19, 10.21, 10.26. | 7 | 6,4, 3, 3,4, 3, 5. |
| 10.30-11.00 | 10.32, 10.34, 10.37, 10.40, 10.42, 10.44, 10.50, 10.53, 10.57. | 9 | 6,2,3,3, 2, 2, 6, 3, 4. |
| 11.00-1 1.30 | 1 1.05, 1 1.10, 1 1.12, 11.15, 11.18, 11.25, 1 1.28. | 7 | 8, 5,2, 3,3,7, 3. |
| 11.30-12.00 | 11.35, 11.37, 11.40, 11.42, 11.47, 11.53, 11.59. | 7 | 7, 2, 3, 2, 5, 6, 6. |

Sources: Researcher's observation 2004.

There are 'FIGHT' 30minutes periods. Assume that just arrival prior to 8.00a.m. occurred at 7.50 a.m. It means that the first inter arrival time is 10 minutes.

Inter Arrival Time for Cashier

| Interarrival Time | Frequency | Cumulative Frequency | Probabilities | Cumulative Frequency |
|-------------------|-----------|----------------------|---------------|----------------------|
| 0 | - | - | - | - |
| 1 | 4 | 4 | 0.0645 | 0.0645 |
| 2 | 14 | 18 | 0.2258 | 0.2903 |
| 3 | 19 | 37 | 0.3065 | 0.5968 |
| 4 | 5 | 42 | 0.0806 | 0.6774 |
| 5 | 8 | 50 | 0.1290 | 0.8064 |
| 6 | 5 | 55 | 0.0806 | 0.8870 |
| 7 | | 58 | 0.0484 | 0.9354 |
| 8 | 2 | 60 | 0.0323 | 0.9677 |
| 10 | 1 | 61 | 0.0161 | 0.9838 |
| 13 | 1 | 62 | 0.0161 | 1.0000 |
| Total | 62 | | | |

Sources: Researcher's observation 2004.

Table of Service for Cashier

| Time | Time of Service Completion for Each Customer (hr: min) | Number of Completion for During the Period | Service Time Each Customer (min) |
|--------------|--|--|----------------------------------|
| 8.00-8.30 | 8.10, 8.12, 8.15, 8.20, 8.27. | 5 | 4, 2, 3, 5, 7. |
| 8.30-9.00 | 8.32, 8.36, 8.40, 8.45, 8.49, 8.55. | 6 | 5, 4, 4, 5, 4, 6. |
| 9.00-9.30 | 9.01, 9.03, 9.08, 9.15, 9.20, 9.24. | 6 | 6, 2, 5, 7, 5, 4. |
| 9.30-10.00 | 9.32, 9.36, 9.40, 9.45, 9.49. | 5 | 8, 4, 4, 5, 4. |
| 10.00-10.30 | 10.03, 10.07, 10.14, 10.20, 10.25. | 5 | 4, 4, 7, 6, 5. |
| 10.30-11.00 | 10.31, 10.36, 10.38, 10.42, 10.48. | 5 | 6, 5, 2, 4, 6. |
| 11.00-11.30 | 11.01, 11.06, 11.10, 11.15, 11.18, 11.21. | 6 | 13, 5, 4, 5, 3, 5. |
| 11.30-12.00 | 11.31, 11.36, 11.40, 11.45, 11.49, 11.54. | 6 | 8, 5, 4, 5, 4, 4. |
| 12.00-12.30 | 12.02, 12.05, 12.09, 12.15, 12.22, 12.26. | 6 | 9, 3, 4, 6, 7, 4. |
| 12.30-1.00 | 12.34, 12.40, 12.45, 12.53, 12.59. | 5 | 8, 6, 5, 8, 6. |
| 1.00-1.30 | 1.04, 1.10, 1.15, 1.22, 1.25. | 5 | 5, 6, 5, 7, 3. |
| 1.30-2.00 | 1.31, 1.37. | 2 | 6, 6. |
| Total | | 62 | 321 minis |

Sources: Researcher's observation 2004.

The 'TWELVE' 30 minutes periods.

Sum of observation (Ex), mean (Xx/n)

Assume that the service completion just prior to 8:10 a.m. occurred at 8:06 a.m. it means that the first inter arrival time is 4 minutes.

Service Time for Cashier

| Service Time | Frequency | Cumulative Frequency | Probability | Cumulative Frequency |
|---------------------|------------------|-----------------------------|--------------------|-----------------------------|
| 2 | 3 | 3 | 0.0484 | 0.0484 |
| 3 | 4 | 7 | 0.0645 | 0.1 129 |
| 4 ■ | 17 | 24 | 0.2742 | 0.3871 |
| 5 | 16 | 40 | 0.2581 | 0.6452 |
| 6 | 11 | 51 | 0.1774 | 0.8226 |
| 7 | 5 | 56 | 0.0806 | 0.9032 |
| 8 | 4 | 60 | 0.0645 | 0.9677 |
| 9 | 1 | 61 | 0.0161 | 0.9838 |
| 13 | 1 | 62 | 0.0161 | 1.0000 |
| Total | 62 | | | |

Sources: Researcher's observation 2004.

Sample of Sixty-Two (62) Inter Arrival and Service Time for Cashier

| S/No. | Time Till Next Arrival | Arrival Time | Commencement of Service | Completion of Service | Inter Service Time | Waiting Time (mins) |
|-------|------------------------|--------------|-------------------------|-----------------------|--------------------|---------------------|
| 1 | 10 | 8:00 | 8:06 | 8:10 | 4 | 6 |
| 2 | 2 | 8:02 | 8:10 | 8:12 | 2 | 8 |
| 3 | 3 | 8:05 | 8:12 | 8:15 | 3 | 7 |
| 4 | 5 | 8:10 | 8:15 | 8:20 | 5 | 5 |
| 5 | 1 | 8:11 | 8:20 | 8:27 | 7 | 9 |
| 6 | 4 | 8:15 | 8:27 | 8:32 | 5 | 12 |
| 7 | 5 | 8:20 | 8:32 | 8:36 | 4 | 12 |
| 8 | | 8:23 | 8:36 | 8:40 | 4 | 13 |
| 9 | 3 | 8:26 | 8:40 | 8:45 | 5 | 14 |
| 10 | 5 | 8:31 | 8:45 | 8:49 | 4 | 14 |
| 11 | 2 | 8:33 | 8:49 | 8:55 | 6 | 16 |
| 12 | 1 | 8:34 | 8:55 | 9:01 | 6 | 21 |
| 13 | 2 | 8:36 | 9:01 | 9:03 | 2 | 25 |
| 14 | 3 | 8:39 | 9:03 | 9:08 | 5 | 24 |
| 13 | 1 | 8:40 | 9:08 | 9:15 | 7 | 28 |
| 16 | 8 | 8:48 | 9:15 | 9:20 | 5 | 27 |
| 17 | 13 | 9:01 | 9:20 | 9:24 | 4 | 19 |
| 18 | 2 | 9:03 | 9:24 | 9:32 | 8 | 21 |
| 19 | 3 | 9:06 | 9:32 | 9:36 | 4 | 26 |
| 20 | i | 9:07 | 9:36 | 9:40 | 4 | 29 |
| 21 | j | 9:10 | 9:40 | 9:45 | 5 | 30 |
| 22 | 2 | 9:12 | 9:45 | 9:49 | 4 | 33 |
| 23 | 3 | 9:15 | 9:49 | 10:03 | 4 | 34 |
| 34 | 5 | 9:20 | 10:03 | 10:07 | 4 | 43 |
| 25 | 5 | 9:25 | 10:07 | 10:14 | 7 | 42 |
| 26 | 2 | 9:27 | 10:14 | 10:20 | 6 | 47 |
| 27 | 7 | 9:35 | 10:20 | 10:25 | 5 | 45 |
| 28 | 2 | 9:37 | 10:25 | 10:31 | 6 | 48 |
| 29 | | 9:39 | 10:31 | 10:36 | 5 | 52 |
| 30 | | 9:42 | 10:36 | 10:38 | 2 | 54 |
| 31 | j [*] | 9:45 | 10:38 | 10:42 | 4 | 53 |
| 32 | 4 | 9:49 | 10:42 | 10:48 | 6 | 53 |
| *> -i | 6 | 10:05 | 10:48 | 11:01 | 13 | 43 |
| 34 | 4 | 10:09 | 11:01 | 11:06 | 5 | 52 |
| 35 | j [†] | 10:12 | 11:06 | 11:10 | 4 | 54 |
| 36 | 3 | 10:15 | 11:10 | 11:15 | 5 | 55 |
| 37 | 4 | 10:19 | 11:15 | 11:18 | 7 | 56 |
| 38 | 3 | 10:21 | 11:18 | 11:23 | 5 | 57 |
| 39 | 5 | 10:26 | 11:23 | 11:31 | 8 | 57 |
| 40 | 6 | 10:32 | 11:31 | 11:36 | 5 | 59 |
| 41 | 2 | 10:34 | 11:36 | 11:40 | 4 | 62 |
| 42 | 3 | 10:37 | 11:40 | 11:45 | 5 | 63 |
| 43 | 3 | 10:40 | 11:45 | 11:49 | 4 | 65 |
| 44 | 2 | 10:42 | 11:49 | 11:53 | 4 | 67 |
| 45 | 2 | 10:44 | 11:53 | 12:02 | 9 | 69 |
| 46 | 6 | 10:50 | 12:02 | 12:05 | 3 | 72 |
| 47 | 3 | 10:53 | 12:05 | 12:09 | 4 | 72 |
| 48 | 4 | 10:57 | 12:09 | 12:15 | 6 | 72 |
| 49 | 8 | 11:05 | 12:15 | 12:22 | 7 | 70 |

| | | | | | | |
|--------------|---|--------|-------|-------|------------|-------------|
| 50 | 5 | 11:10 | 12:22 | 12:26 | 4 | 72 |
| 51 | n | 11:12 | 12:26 | 12:34 | 8 | 74 |
| 52 | 3 | 11:15 | 12:34 | 12:40 | 6 | 79 |
| 53 | 3 | 11:18 | 12:40 | 12:45 | 5 | 82 |
| 54 | 7 | 1 1:25 | 12:45 | 12:53 | 8 | 80 |
| 55- | 3 | 11:28 | 12:53 | 12:59 | 6 | 85 |
| 56 | 7 | 1 1:35 | 12:59 | 1:04 | 5 | 84 |
| 57 | 3 | 11:37 | 1:04 | 1:10 | 6 | 87 |
| 58 | 7 | 11:40 | 1:10 | 1:15 | 5 | 90 |
| 59 | 2 | 1 1:42 | 1:15 | 1:22 | 7 | 93 |
| 60 | 5 | 1 1:47 | 1:22 | 1:25 | 3 | 95 |
| 61 | 6 | 1 1:53 | 1:25 | 1:31 | 6 | 92 |
| 62 | 6 | 11:59 | 1:31 | 1:37 | 6 | 92 |
| Total | | | | | 321 | 3020 |

Sources: Researcher's observation 2004.

The average time spent by the customers on the queue = $\frac{3020}{62} = 49$ minutes

62

The average inter arrival time = $\frac{236}{62} = 4$ minutes

The average inter service times by the bank = $\frac{321}{62} = 5$ minutes

The average time spent by the customer in the system = Average time spent on the queue + Average service time:
49 minutes + 5 minutes = 54 minutes.

Discussion of Findings

The analysis above indicates that the arrival rate is greater than the service rate and this led to queue problem. It is also observed from the investigation that the arrival rate is far from the service rate this is because there is no correlation between the rate at which the customers troop in to the banking hall and rate at which services were rendered. Besides, customers in some cases arrived at the bank before commencement of banking operation, which officially commences by 8:00 a.m. The study revealed that before the bank commences operation, queue is already formed. The bank management must therefore address this issue.

The study also revealed that customers over stay on the queue especially during the peak period that results in the loss of man-hour. This negatively affects other activities of the customers, such as lateness to work, etc as claimed by some customers interviewed. The bank must therefore increase the level of computerization in such a way that customers will be able to withdraw and deposit money at any branch of the bank throughout the state and federation. For instance, students can only pay their school fees at a particular branch of the bank in this case Mini or Main campus branch of the bank. This led to congestion which results to dissatisfaction on the part of customers. There should be an avenue where customers particularly the students will be able to pay their school fees at any branch of the bank instead of limiting them to a particular branch. The bank must satisfy the needs of the customers as the customers see them. The bank that ignores this fact is definitely asking for trouble.

The study shows that there is slight variation in the operating features of the bank. This may probably due to the synonymy of service rendered. However, the investigation revealed that the peak periods of the bank is months' end and beginning of University of

llorin academic session, since it is considered as official bank of the University. The researcher also noted that the selected branch is one of the branches that have highest number of customers as revealed by one of the bank officials.

Conclusion

Queue theory is very useful and relevant for management of business organizations especially in the service industry. It is highly useful in planning and making decisions that will affect the smooth running of business organizations and enhance customer satisfaction.

The involvement of human factor in the provision of service affects its variation. Henceforth, high human involvement in a system leads to high variation in the service duration and the lower the human involvement in system, the lower the service variation. One needs to recall that constant time is common when a service is highly mechanized or automated.

The management of Trade Bank Pic must be conscious that if the queue formed is very large, it will discourage customers and this result to lose of customers to rival banks especially at this period that many banks have commenced operations in Ilorin Metropolis. This therefore necessitates the bank to observe queue discipline, that is, customers must be served on first come and first served basis. Although, there are other queue disciplines such as Last In First Out, Alphabetical Discipline, etc. In some cases there are some pre-arranged schedules which is common among doctors. In this situation, customers will be attended to on predetermined arrangement not minding the time of arrival. However, management of the bank must as much as possible use FIFO method that is First Come First Out in attending to their customers.

The operator of a service organization should know that queuing theory alone can not bring solution to congestion problem in an organization. It is not an end but a means to an end. Therefore, manager cannot substitute it with managerial thinking; it can only serve as an aid to congestion problem. Henceforth, the management of the bank must effectively analyse the customers' situation and then complement it with queuing theory. It is paramount therefore for a bank to make a sound decision as regards to the queue problem that can be achieved by taking cognizance of the service facilities in the bank.

Conclusively, it is high time for banks' managers to realize that customer satisfaction is the key to continued patronage. They therefore need to make a specific effort to attend to the customers' needs and reduce the length of time they spend on the queue.

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