Queuing Time and Shopping Time of D-Mart Customers with Special Refrenceto Guntur City, Andhra Pradesh

Ch. Hymavathi, Abhilash Nissankara Rao

Abstract--- Retail industry was developed very high in Andhra Pradesh state, the retail stores are very success with their customers, and customers are satisfied retail stores services, there is only one problem is facing from retail stores is customers billing time. To solve this is to find that retail store customer waiting time is high or not. With the pilot study data collected with that data used some statistical technics are used and results are found. Most of the customers are interested to shopping in evenings time, and at the same time the shopping malls are attracted customers with good discount offers.

Key words:Retail store, Customers, Waiting time, Billing.

I. INTRODUCTION

Efficiency management is an important factor in the design of service programs. These decisions will have a trade between maintaining service level criteria and the value corresponding to customers. The first edition of the Operating Management literature is focused on the development of the first edition of development models that can be used to calculate the excess working service costs.As these operating costs are more positive, it often happens to observe the terms of service that are designed to achieve the qualifying target service level. For example, a general rule in retail stores opens additional checkout when the length of the queue crosses the threshold. However, there is not much research on how to choose the right target service level.It translates and estimates the value of allocating customers to target service level actions. Customers waiting in the queue in real customer purchases to measure the effectiveness of the paper's vision service levels, especially to attach the financial value to customer service. Lack of data is an important limit to studying the effectiveness of customer behavior.One notable exception call center, where some recent studies focus on when waiting for the phone to wait on the phone with impatience, studying physical queues in our attention services, where consumers are physically awaiting the service. This kind of queue is common, for example, retail stores, banks, amusement parks, and healthcare delivery. Although target data in the customer service is not generally available in the service facilities, many previous researches relies on how to survey surveys to educate consumers about their behavior.

II. OBJECTIVES OF THE STUDY

1. To find how much queuing time is taking the customer from shopping to billing process.
2. To find at what time this Queuing time is high in the Retail store.
3. To find out exit timings of the customers and shopping times of the customers.

III. NEED FOR THE STUDY

Now a days in the retail stores in India floating of customers are very high, for this floating the retail store the customer billing waiting time is high. Is this real the billing waiting time is high in the retail stores to find in real time for this reason this study is conducted to find the reality of the retail stores billing waiting time is high or not.

IV. LITERATURE REVIEW:

In this section, a brief review of the literature watched on customer behavior and its effects for queues management. Extensive empirical research activities were conducted in management, marketing, and financial sectors using experimental and verifiable data. We will look at this review on the literary selection that will help us to identify the behavioral patterns that are used in the development of our economist model (described in § 3).At the same time, we also suggest survey articles that provide a more comprehensive review of various literary streams. Recent studies in-service engineering literature analyzed customer transaction data in case of call centers. See Guns et al. (2003) by a survey in this survey.

Customers who reach the call center will create a poisoning process called "patience threshold" for everyone: his patience reaches the queue after waiting for more than the threshold.It is commonly referred to as the Erlang-A Model or M / M / c G, where G represents the normal distribution of customer endurance threshold. Brown et al. (2005) The Call Center is used to measure the distribution of open threshold based on central transactional data, and to measure the effect of time waiting on lost (left) users.

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Customers coming into the call center generally do not notice the number of customers directly on the line, so the time spent on the service provider may be based on estimates of their earlier experience (Ibrahim and Wit 2011) with service provider or services.

On the contrary, for the physical customer queues at a retail store, the length of the line is observed and the cue that appears to affect their perceived wait time. Hence, the queue is an important factor in consumer decision to join the queue, which is not in the Erlang-A modes.In these settings, the system is modeled as a poison process, and some of the users who come here may be bogged-not in the queue depending on the number of people already in the queue (grass and others 2008, chap 2.10).

The focus and ability of the queue that provides an important input for queue models will focus on how we can identify the physical rows that affect the choices of any customer. PNG and Rietman (1994) study the effect of waiting time on demand for gas stations and recognize the time of service as the main variable factor in the retail industry.Their assessment depends on all data on gas station sales and uses the power of proxy station's ability to wait for the waiting time.

V. RESEARCH METHODOLOGY:

We apply our approach using field data collected in a pilot study conducted in a D-MART supermarket's deli section. The main purpose of our approach to survey data is that the simple and often collected collection of store activity data allows us to build a large panel data set that requires us to identify the sensitivity of each customer.There are two important challenges in our assessment. The crowded store is crowded on traffic, so long sales periods have long lines. Consequently, we face the problem of reverse lawsuits: we are interested in calculating the effect of waiting on sales, the moves in the sale of a congestion and a wait for a long time.

VI. DATA ANALYSIS & RESULTS

Table-1
Entry Time of Customers

| Entry Time	Percentage
4:00-4:59	13.73
5:00-5:59	11.76
6:00-6:59	27.45
7:00-7:59	47.06
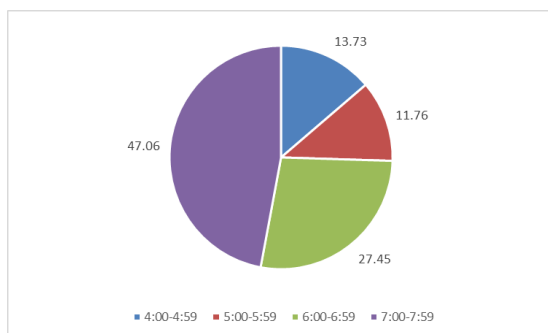
The table -1 explains the entry time of customers entered into the store in the taken time period the time period is

taken in the data collection is evening time from 4.00 pm to 8.00 pm. In that timings the from 4.00-5.00 is the customers visit the store 13.73%, from 5.00 to 5.59 is the customer visit the store 11.76%, from 6.00 to 6.59 is the customer visit the store 27.45% and from 7.00 to 7.59 is the customer visit the store is 47.06%. In the table we observed that the from 7.00 to 7.59 period most of the customers entered into the retail store.
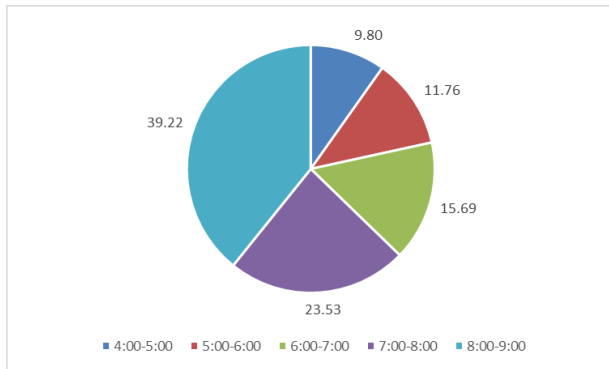
Table-2
Customers enters Billing Que

Billing Queque	Percentage
4:00-4:59	9.80
5:00-5:59	13.73
6:00-6:59	13.73
7:00-7:59	29.41
8:00-8:59	33.33
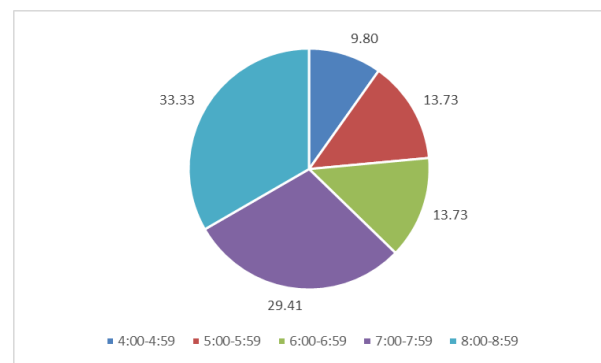
The table-2 explains the customers entered in billing que in the retail store, the data is collected from 4.00pm to 8.00 pm so the customers entered into the billing que is also taken from 4.00 pm to 8.00 pm. From 4.00 to 4.59 only 9.80% of customers entered in to the billing que. 5.00 to 5.59, 6.00 to 6.59 only 13.73% of the customers are entered into billing que. 7.00 to 7.59 only 29.41% of the customers are entered into the billing que, 8.00 to 8.59 only 33.33% are entered into the billing que.

Table-3
Exit of customers

Exit Time	Percentage
4:00-5:00	9.80
5:00-6:00	11.76
6:00-7:00	15.69
7:00-8:00	23.53
8:00-9:00	39.22

The table-4 explains the shopping time of the customers from 4.00 to 8.00 the maximum shopping time of the customers and the frequency is 0.30-.45minutes from the data collected 16 members are taken and 0.45-0.55 minutes 7 members are done.

Table-5
Waiting time of the Customers

Waiting Time	Frequency
0.03-0.08	30
0.08-0.13	13
0.13-0.18	6
0.18-0.23	2
Grand Total	**51**

The table-3 explains the exit time of customers from the retail store, from 4.00 to 8.00 the data is collected so the exit time is also noted from 4.00 to 8.00, from 4.00 to 5.00 only 9.80%, from 5.00 to 6.00 only 11.76%, 6.00 to 7.00 only 15.69%, 7.00 to 8.00 only 23.53, 8.00 to 9.00 only 39.22%.
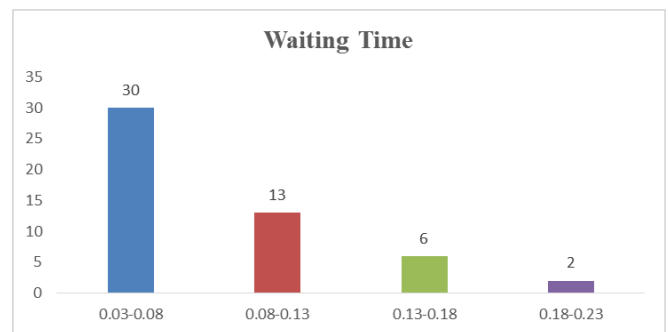
Table-4
Shopping Time of the Customers

Shopping time	Frequency
0:05-0:15	5
0:15-0:25	11
0:25-0:35	12
0:35-0:45	16
0:45-0:55	7
Grand Total	**51**

The table-5 explains the waiting time of the customers in the billing que the data collected 51 members are in that 30 members are done their bill within the 8 minutes when entered into billing que. 13 members are waiting from 8 to 13 minutes. 6 members are waiting from 13 to 18 minutes.

Table -6
Regression Analysis on billing time with respect to entry time and exit time.

Regression Statistics	
Multiple R	0.99875042
R Square	0.997502402
Adjusted R Square	0.997398335
Standard Error	0.002742529
Observations	51

ANOVA					
	df	SS	MS	F	Significance F
Regression	2	0.144190	0.072095	9585.231242	0.000000
Residual	48	0.000361	0.000008		

Total	50	0.144551			
	Coefficients	*Standard Error*	*t Stat*	*P-value*	
Intercept	-0.00261	0.00225	-1.16333	0.25045	
ENTRY TIME	-0.04103	0.02846	-1.44183	0.15584	
BILLING QUEUE	1.06492	0.02600	40.95975	0.00000	

The table-6 explains the regression analysis on billing time, generally regression is done how much the independent variable effect the dependent variable is observed. In the above analysis the Billing time and entry timeis the independent variables and Exit time is dependent variable, for this regression analysis of the data (R^2) 0.9987% are affect the billing time.The intercept value is -0.00261, the entry time coefficient is -0.04103, the billing time coefficient is 1.06492. The F value is 9585.23, and the standard error is 0.0027%. It means the exit time of the customers mostly depend on entry time and billing time. If the billing time increased the customer exit time also increased.

VII. FINDINGS:

1. The customers are entered in to the store after 7 pm to 9 pm.
2. The shopping time is starts from 6 pm to 9 pm.
3. The waiting time is below the 10 minutes after entering billing que.
4. The exit time is also high in 8 pm to 9 pm.
5. In the timings the from 4.00-5.00 is the customers visit the store 13.73%, from 5.00 to 5.59 is the customer visit the store 11.76%, from 6.00 to 6.59 is the customer visit the store 27.45% and from 7.00 to 7.59 is the customer visit the store is 47.06%. In the table we observed that the from 7.00 to 7.59 period most of the customers entered into the retail store.
6. From 4.00 to 4.59 only 9.80% of customers entered in to the billing que. 5.00 to 5.59, 6.00 to 6.59 only 13.73% of the customers are entered into billing que. 7.00 to 7.59 only 29.41% of the customers are entered into the billing que, 8.00 to 8.59 only 33.33% are entered into the billing que.
7. From 4.00 to 8.00 the data is collected so the exit time is also noted from 4.00 to 8.00, from 4.00 to 5.00 only 9.80%, from 5.00 to 6.00 only 11.76%, 6.00 to 7.00 only 15.69%, 7.00 to 8.00 only 23.53, 8.00 to 9.00 only 39.22%.
8. the shopping time of the customers from 4.00 to 8.00 the maximum shopping time of the customers and the frequency is 0.30-0.45 minutes from the data collected 16 members are taken and 0.45-0.55 minutes 7 members are done.
9. 30 members are done their bill within the 8 minutes when entered into billing que. 13 members are waiting from 8 to 13 minutes. 6 members are waiting from 13 to 18 minutes.

VIII. SUGGESTIONS:

1. The time wasted in billing que is to be reduced to increase the billing counters in the retail store.
2. The store maintains new billing process to reduce the billing waiting time.
3. To maintain new billing counters in the particular shelfs so to bill in that shelf only.
4. To avoid long billing queue, implement the smart shopping card.It create a better, faster and more efficient shopping experience for the customers
5. It minimizes the man-power required at the shopping malls, as the billing process at the checkout is eliminated altogether
6. It monitors and modifies cases of discrepancies and deception, if any, thereby making the system attractive not only to the customers but also to the store owner

IX. CONCLUSION:

From the research we observed that these suggestions are useful to implement these suggestions in the store. The limitation of the research is timings and days are not sufficient to give the above suggestions.This is one of our great British features. But now the shoppers fall in love with the queue, and in recent research 41 percent of people are prepared to join the long row.

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