

Efficiency of Teller Service Time at Limited Companies of Bank North Sulawesi and Gorontalo Kotamobagu Branch



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ABSTRACT: This research was conducted at Limited Companies of Bank North Sulawesi and Gorontalo Kotamobagu Branch with the aim of knowing the efficiency of bank teller service time provided to customers. Service is an action that is often carried out by service companies such as banking financial institutions. In the queuing system, consumers will become loyal customers if they feel satisfaction because they don't wait too long, and this will benefit the company concerned. The results of the study obtained that the standard teller time serving one customer was 6 minutes 88 seconds. The number of subscriptions waiting in each queue at the teller counter with normal circumstances is two people while the subscription time waiting in the teller counter queue under normal circumstances is 11 minutes 28 seconds. The length of waiting plus the average service time of each customer in the teller system is 15 minutes must be reduced by adding two tellers so that it becomes four tellers. Thus, a good, fast, and maximum service system can be proven by the standard teller time in serving one customer with an efficient time of 7.5 minutes.

KEYWORDS: Maximum service.

I. INTRODUCTION

1.1. Background to the Problem

The development of a bank is always followed by problems both internal and external that arise as a result of the influence of the situation and conditions faced by the bank, as long as the bank operates and moves, the bank must be ready and able to answer all the challenges faced. The influence that we can see in the growth in the number of Bank Offices is that market conditions are very competitive. In the face of competition like this, it seems that each bank has a strategy to determine steps in order to outperform its rivals in grabbing customers, for this reason, banks are required to increase efficiency in service and the ability to design new products.

The ease of opening branch offices throughout Indonesia allows the expansion of service networks to the community. For this reason, service and hospitality to customers are the main capital of competition in the banking industry, besides that the most important thing in bank services is that the type of services or products offered must be appropriate and can meet the needs of bank services with its market penetration strategy. Of course, in addition to the programs offered, banks try to provide the best service to customers, for example, employees try to serve customers who come to the bank as well as possible so that the transaction process carried out is not too long so that customers get a good *image* of the bank.

The rapid progress achieved in development has caused customers to assess the services of a bank to be very critical. On the other hand, there is very sharp competition between banks. The latter is a sensitive issue for today's and future communities or clients. Therefore, bank managers must really pay attention to the aspect of service to customers. Banks must have a commitment that the satisfaction felt by customers is something that cannot be bargained anymore.

Service issues must be emphasized seriously and maximally and are no exception for Limited Companies of Bank North Sulawesi and Gorontalo (PT. Bank Sulutgo or BSG) Kotamobagu Branch located in the center of Kotamobagu. PT. Bank Sulutgo Kotamobagu Branch as one of the commercial banks in Kotamobagu is trying to adjust to the current banking market situation. As for the number of customers who come per day, who use the services of PT. Bank Sulutgo Kotamobagu Branch is the one in the following table.

Table 1. The number of customers who come every day using the services of PT. Bank Sulutgo Kotamobagu Branch.

Day	Number of Customers Who Come		Average Number of Customers per day
	Rush Hour 08.00 - 12.00	Outside of Peak Hours 13.00 - 15.00	
Monday	75	35	110
Tuesday	62	27	89

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Wednesday	55	23	78
Thursday	47	20	67
Friday	30	18	48

Source: Survey, 2021.

Now what needs to be considered to ensure continuity is to establish cooperation between banks and customers, a good and integrated service system will certainly make service user customers and the bank have a good relationship, so as to create service stability. On the contrary, an unfavorable and unintegrated service system will harm one of the parties, so there will be conflicts between customers and the bank and eventually create instability.

1.2. Problem Formulation

Based on the background of the problem that has been stated, it can be formulated, namely; Is the teller service of PT. Bank Sulutgo Kotamobagu Branch has been implemented efficiently?

1.3. Research Objectives

This research was conducted with the aim of:

1. To find out the service system provided by PT. Bank Sulutgo Kotamobagu Branch towards customers.
2. Knowing how long the customer's waiting time is when served by the bank.

1.4. Research Usefulness

The uses or benefits of this research are:

1. Provide useful input for bank managers regarding how the services provided to customers, especially at PT. Bank Sulutgo Kotamobagu Branch.
2. Provide positive and valuable inputs for the development of science in the field of management, especially the management of queuing services.

II. THEORETICAL FOUNDATIONS

2.1. Marketing Management

According to Kotler Phillip (1997; 14) Marketing Management is a process of planning, conception, pricing, promotion and distribution, the idea of goods and services to produce exchanges that meet the goals of individuals and organizations. It rests on the accuracy of the analysis of a need, desire, perception and market selection aimed at being the basis for product design, communication pricing and distribution effectively.

Based on the limitations stated by Kotler, there are several points of thought, including:

- a. Marketing management can be viewed according to a process that includes analysis, planning, implementation and supervision.
- b. Marketing management can be viewed as an activity aimed at creating, building and maintaining a profitable exchange together.
- c. Marketing management as an activity for planning effective products, prices and distribution.
- d. Marketing management can be viewed as an activity to analyze market needs, wants and tendencies.

Sumarni (2003 ; 67), puts limits on marketing management as a process of analysis, planning, implementation and control over programs designed to create, form and maintain exchanges that benefit target buyers, with a view to achieving organizational goals. Because in general it can be said, that marketing management is a concept of a business philosophy that is oriented towards the satisfaction of consumer needs. As the main condition for the operational success of a company in the future.

2.2. Definition of Bank

According to Stuart Verryn G.M. (1990: 17), a bank is an entity that aims to satisfy credit needs, either by its own means of payment or money obtained from others, or by circulating new means of exchange in the form of real money.

According to the basic banking law No. 14/1967, banking is defined as follows: "A bank is a financial institution whose main business is to provide credit and services in payment traffic and money circulation".

With this understanding, it can be concluded that the bank is a financial business entity that aims to provide credit and services. The provision of credit is carried out either by own capital or by funds entrusted by third parties or by circulating new means of payment in the form of real money.

2.3. Service System

According to Wilkimson J. (1990: 25) a system is a complex whole that is formed and often divided according to a common plan or to achieve a common goal, objects combined in interaction or interdependence, a whole that works regularly. The system according to Cushing Barry E. (1984 : 16) is : "A whole consisting of two or more components or subsystems that are intertwined with each other to achieve a goal".

Wilkimson J. (1990 : 25) elaborates on the general characteristics of a system consisting of :

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1. Goals where each system strives to achieve one or more goals (objectives), and this is a motivational force for the system.
2. Input – Process – The input output consists of everything tangible that has an impact on the system. Process is a method in the form of a tool to convert input into output while output consists of all outflows due to which it produces.
3. Environment, everything around the system is its environment.
4. Subsystem is a very small system in which the subsystem performs a specialized one when compared to the role of the system, and that is where the characteristics of a complete system will be formed.
5. Interdependence, each system experiences multiple dependencies.
6. System network, showing the interdependence between systems whose position is at the same level as the hierarchy.
7. Constraints, any system that experiences obstacles is an internal or external obstacle that limits the capabilities of the system.
8. Control is a regulatory process used by the system to correct each storage of the destination area.

The definition of Service/Service according to Kotler Phillip (1997: 6) is any act or deed that can be offered by a party to another party, which is basically physically intangible and does not result in ownership of something. Service production can be related to physical production or not.

According to Moenir H.A.S (1998: 16) Service / Service is the process of fulfilling needs through the activities of others. Queuing Theory according to T. Dimiyati Tjutju (1992: 349) is a theory that concerns the mathematical *study* of queues or waiting lines.

2.4. Standard Time Concept

According to Ogawa Eiji (1985: 45-47) to find out some time the standard consumer waits in service, it is necessary to break down the standard into three categories, namely:

1. Quantifiable standards, called physical standards.
2. Methodology-oriented standards or ways called behavioral standards.
3. Standards related to the way of thinking, are called philosophical (ethical) standards. The above standards can be applied in work. A philosophical standard can be based on the ability of man to select work. A research methodology or efficient and appropriate way of working based on philosophical standards or becoming a standard of behavior. The work procedure determines the number of product units and the time it takes to create a product unit as its physical standard.

As written in Research on Profit Impact Of Marketing Strategy : extracted from Ron Zemke, Service Edge, p. 8 says that :

- ❖ Those who are recognized as leaders in the field of service can charge 9.10 % more for basic goods or equally good services.
- ❖ Those recognized as Leaders in the field of service grow twice as fast as their competitors.
- ❖ Those who are recognized as leaders in the field of service increase their market share by 6% per year, while those considered as poor service suppliers lose 2% per year.

2.5. Study Time

According to Ahyari Agus (1998: 404-408), time study is one way to prepare standard time. The procedures in the preparation of standard time with this study are as follows:

- a) Taking employees carelessly for research or observing the time used to complete a unit of work.
- b) Calculate the average time it takes to complete a unit of work. One unit of work here can be counted towards one unit of the final product, or one part of the completion of the final product.
- c) Examine the proficiency level of the Employee used as a sample, whether the proficiency level is a normal or above normal or below normal proficiency level.
- d) Calculating normal time, that normal time is the time required by an Employee with a normal proficiency level to complete one unit of work.
- e) Determining the backup time, this backup time is the time that will be used by employees caused by various other causes such as unexpected disturbances.
- f) Taking into account the standard time, the standard time is taken into account on the basis of the summation of the normal time and the backup time.

2.6. Queuing Theory in Service Design

According to Ahyari Agus (1998: 185-190), from the queue theory developed there are queue models that are used in different problems. This model is different from one another, therefore by using this model, it is hoped that it can find the right solution to different situations and conditions. Errors in model selection will result in solving errors faced by this company.

Table 2. Some of the circumstances of the queue model are:

a. Lay Out	:	Single channel
b. Service Phase	:	Single phase
c. Population	:	Unlimited

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d. Arrival pattern	:	Following the distribution of poisson
e. Queue length	:	Unlimited
f. Service patterns	:	Exponential
g. Queuing discipline	:	Come first served first
h. Examples of companies	:	Bank Teller and so on

Source: Ahyari Agus (1998).

Queue models according to Handoko, T. Hani (1996: 58-60), queuing models are based on mathematical probability assumptions about several subscriptions. The problems that can be solved with waiting line theory include how companies can determine the best time and facilities in order to serve subscriptions efficiently. For example, if consumers feel satisfaction because they don't wait too long, it will benefit the company concerned, therefore consumers will become subscriptions.

2.7. Previous Research

Research on this queue model was conducted by Magfirah, Moh. Aris Pasigai, and Muhammad Nur Abdi in 2019 with the title "Analysis of the Application of the Queuing

System at PT. Bank Rakyat Indonesia (Persero) TBK. Sub-Branch Office of Pallangga

Unit, Gowa District. This study concluded that the performance of the queuing system with 2 tellers there is a long waiting time for customers (W_q) in the queue, which is 0.055 hours or 3.31 minutes and the average number of customers in the queue is the highest (L_s) as many as 3,052 people and this happens in the time period 08.00 – 09.00. This shows the performance of the queuing system in the PT. Bank Rakyat Indonesia (Persero) Tbk. Pallangga Sub-Branch Office Unit is not optimal.

While the calculation results with the addition of 1 number of tellers to 3 can be obtained the performance of the queuing system with the calculation results, namely the average number of customers in the largest queue (L_s) 1,656 people in the time period

08.00-09.00. The length of customer waiting time (W_q) in the queue has been reduced to 0.007 hours or 0.43 minutes. Thus the addition of 1 number of tellers will increase and be optimal.

The research shows that the service of 2 tellers is not optimal so that 1 teller must be added so that 3 tellers will be optimal.

2.8. Hypothesis

The hypothesis in this research is "Allegedly, the time required by Teller in serving PT. Bank Sulutgo Kotamobagu has not been efficient".

III. RESEARCH METHODOLOGY

3.1. Place and Time of Research

This research was conducted at PT. Bank Sulutgo Kotamobagu Branch with a period of 3 months, from October to December in 2021.

3.2. Population Data Retrieval Methods

The population data from this study are observations ranging from 48 to 110 people from all characteristics related to the object of this study, in this case the arrival of PT customers. Bank Sulutgo Kotamobagu Branch.

3.3. Operational Definition and Variable Measurement

In the research conducted, the variables to be used are:

1. Non-free variables (λ and μ) are lamda and myu or average arrival and service times to customers. This variable is measured by units of time (seconds, minutes, hours).
2. The free variable (P) is a factor of the level of usefulness of the customer or opportunity called probability. This variable is measured by the unit of person or customer.

3.5. Analytical Techniques

To test the research hypothesis, the author uses queue data analysis whose steps are as follows (Handoko T. Hani, 1996: 60 and Pangestu Subagyo, 2019: 7.35):

1. The average arrival rate (time) = $1 / \lambda$.
2. Average service rate (time) = $1 / \mu$.
3. Proportion of the average time it takes for the cashier to serve subscription or usability factor (level) (P) or $P = \lambda / \mu$.
4. Average number of subscriptions waiting in a queue (L_q).

λ^2

$$L_q = \mu (\mu - \lambda)$$

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1. The average number of subscriptions is in the overall system queue (waiting for the plus being served), L_s .

$$L_s = \frac{\lambda}{\mu - \lambda}$$

6. Average subscription time waiting in queue, W_q .

$$W_q = \frac{\lambda}{\mu(\mu - \lambda)}$$

7. The average time each subscription is inside the overall system (waiting time plus serving time), W_s .

$$W_s = \frac{1}{\mu - \lambda}$$

7. The probability (likely) of no subscription in the overall system, P_0 , or

$$P_0 = 1 - \lambda / \mu$$

9. The probability that there are n individuals being in the system (P_n) or : $P_n = (1 - \lambda / \mu) (\lambda / \mu)^n$

10. Probability distribution for P_n and P_0 ($n \geq k$) = P_k or :

$$P_k = (\lambda / \mu)^k \text{ Information:}$$

L_q = Average number in the queue

L_s = The average number of entire systems, including those under study

W_q = Average wait time

W_s = Total average time

P_0 = Probability of no n individuals in the system

P_n = Probability of there being n individuals in the system P_k = Probability distribution there are n individuals in the system λ = Arrival rate

μ = Level of service.

IV. RESULTS OF RESEARCH AND DISCUSSION

4.1. Research Results

Time of employees or employees of tellers PT. Bank Sulutgo Kotamobagu Branch serves its customers can be seen in the following observation results.

Table 3. The result of the observation of the time required by the employee per unit of work.

Number Observation	Time	Teller I	Teller II
1.	Morning 08.00 – 10.00	14 minutes 20 seconds minutes 10 seconds minutes 30 seconds	12 minutes 40 seconds 16 minutes 30 seconds 15 minutes 10 seconds
2.	Noon 10.00 – 12.00	minutes 20 seconds minutes 12 seconds minutes 45 seconds	10 minutes 50 seconds 13 minutes 12 seconds 18 minutes 30 seconds
3.	Afternoon 14.00 – 15.00	20 minutes 32 seconds 14 minutes 30 seconds 10 minutes 18 seconds	10 minutes 32 seconds 18 minutes 38 seconds 10 minutes 20 seconds
Average		16 minutes 24 seconds	14 minutes 29 seconds

Source: Observation, 2021.

In table 3, you can find out the average time needed by tellers in serving customers, namely:

- Teller I = 16 minutes 24 seconds
- Teller II = 14 minutes 29 seconds

4.2. Discussion

The queue model used in PT. Bank Sulutgo Kotamobagu Branch in the service process is a queue model line as follows:

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Customer arrives Filling out form/proof of transaction Entering in queue Service by Teller Completed Exit the system.

The observed customers included are customers who withdraw funds and deposit funds with PT. Bank Sulutgo Kotamobagu Branch for 6 (six) standard hours every weekday.

Table 4. The results of the research on the number of customers who use savings services on PT. Bank Sulutgo Kotamobagu Branch.

Day	Number of Customers Who Come		Number of Customers	
	Rush Hour 08.00–12.00 AM	Outside of Peak Hours 13.00–15.00 PM	Average per Day	Average per Hour
Monday	75	35	110	110 = 18
Tuesday	62	27	89	89 = 15
Wednesday	55	23	78	78 = 13
Thursday	47	20	67	67 = 11
Friday	30	18	48	48 = 8
	263/5 = 54	123/5 = 25	392/5 = 78	79/6 = 13

Source: Processed data, 2022.

From table 4 above, it can be seen that in 1 hour there are 13 customers who use PT. Bank Sulutgo Kotamobagu Branch.

With the following service system:

Customer arrives filling out savings slip deposit/withdrawal queued in front of Teller service at Teller counter service completed exit Banking hall.

Processed research data in table 4. using a random technique, which is taken randomly, whether it is a capable or underprivileged customer, young or old, students or employees and other professions.

The average time required by tellers in serving customers is:

6 minutes 88 seconds

= ----- = 6 minutes 88 seconds. 1 Teller

So in one hour a teller can serve:

60 minutes (1 hour)

= ----- = 8.7 customers or 8 individuals 6 minutes 88 seconds with total tellers in PT. Bank Sulutgo

Kotamobagu Branch as many as 2 people, then the teller system of PT. Bank Sulutgo Kotamobagu Branch can serve:

= 2 x 8.7 customers = 17 customers every hour.

In serving customers of PT. Bank Sulutgo Kotamobagu Branch researchers have conducted a survey based on observations so far and analysis that the standard time of tellers is an average of 8 minutes / person to make transactions by adhering to the principle of *One Stop Service*, while from the results of research and interviews the average customer wants to be served with no more than 10 minutes. So, with a *one stop service* system, a teller is expected (customer expectations) to serve an average of 6 customers per hour. To calculate how long the service time on the PT. Tabungan product. Bank Sulutgo Kotamobagu Branch for customers, the author uses a queue model formula, namely:

1. Average arrival rate = $\lambda = 13$ per hour

$\frac{1}{\lambda}$

Average arrival time = --- = --- = 0.08 hours $\lambda = 13$

= 0.08 x 60 minutes

= 4.8 minutes

So the difference in the average arrival time of each customer is 4 minutes 8 seconds.

2. Average teller service level = $\mu = 17$ per hour

$\frac{1}{\mu}$

Average service time = --- = --- = 0.06

$\mu = 17$

= 0.06 x 60 minutes

= 3.6 minutes

So, the service time of the teller system to customers on average is 3 minutes 6 second.

3. Proportion of average time required by tellers to serve customers (level of usability): $\lambda = 13$

$P = \frac{\lambda}{\mu} = \frac{13}{17} = 0.7647$

So, the usability rate of the equipment is 76.47%.

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4. Average number of subscriptions waiting in queue: $\lambda^2 = 13^2$

$$Lq = \frac{\lambda^2}{\mu(\mu - \lambda)} = \frac{17(17 - 13)}{169}$$

$$= \frac{68}{169}$$

17 (4)

$$= 2.49$$

So, the average number of subscriptions waiting on each queue at each counter is 2 people.

5. The average number is within the overall system: $\lambda = 13$

$$Ls = \frac{\lambda}{\mu - \lambda} = \frac{13}{17 - 13} = 3.25$$

So, the average number of subscriptions being inside the overall system is 3 people.

6. Average subscription time in queue: $\lambda = 13$

$$Wq = \frac{\lambda}{\mu(\mu - \lambda)} = \frac{17(17 - 13)}{169}$$

$$= 0.1911$$

$$= 0.1911 \times 60 \text{ minutes}$$

$$= 11.28 \text{ minutes}$$

The waiting time for customers while in the queue is 11 minutes 28 seconds.

7. The average time of each subscription is in the overall system (waiting plus service time):

$$Ws = \frac{1}{\mu - \lambda} = \frac{1}{17 - 13} = 0.25$$

$$= 0.25 \times 60 \text{ minutes} = 15 \text{ minutes.}$$

So the average time each subscription is in the overall system which is waiting plus the service time is 15 minutes.

8. The probability of time there is no individual in the overall system. $\lambda = 13$

$$Po = 1 - \frac{\lambda}{\mu} = 1 - \frac{13}{17} = 0.2353 \text{ seconds}$$

This means that there are always customers in the system because the probability of no customer in the overall system is 0.2353 seconds, and it is also the time when the teller gets the opportunity to take a break.

9. The probability of time there are individuals in the system.

$$Pn = 1 - \left(\frac{\lambda}{\mu} \right)^n = 1 - \left(\frac{13}{17} \right)^n$$

Average customer time per teller (n) = 8 individuals.

So $n = 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8$

$$\text{Result} = \underline{0.235 \quad 0.180 \quad 0.138 \quad 0.105 \quad 0.080 \quad 0.062 \quad 0.047 \quad 0.036 \quad 0.026}$$

On the probability of no customer in the overall system for 0.235 seconds, when one customer is in the overall system for 0.180 seconds until the eighth customer enters the overall system for 0.026 seconds and is also the time the teller gets a chance to take a break.

10. Time probability distribution there are individual customers in the system.

$$Pk = \left(\frac{\lambda}{\mu} \right)^k = \left(\frac{13}{17} \right)^k$$

The average probability distribution of customer time (k) is in the system of each teller.

So $n = 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8$

$$\text{Result} = \underline{1.000 \quad 0.765 \quad 0.585 \quad 0.447 \quad 0.342 \quad 0.262 \quad 0.200 \quad 0.153 \quad 0.117}$$

This means that the distribution or distribution of the probability that no customer in the system is served per teller for 1 minute, there is one customer served for 0.765 seconds, two customers are served for 0.585 seconds until the eighth customer is served for 0.117 seconds.

V. CONCLUSIONS AND SUGGESTIONS

5.1. In conclusion

Based on the discussion, several conclusions can be drawn as follows:

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1. The standard teller time in serving one customer is 6 minutes 88 seconds while the number of customers in the overall system for one hour there are three customers.
2. The number of waiting subscriptions in each queue at the Counter Teller under normal circumstances is 2 people while the subscription time waiting in the Counter Teller queue under normal circumstances is 11 minutes 28 seconds.
3. Customers who use Savings Services at PT. Bank Sulutgo Kotamobagu Branch is in a saturating waiting time because the waiting time plus the average customer service time of each customer in the teller system is 15 minutes.
4. Because the waiting time plus the average customer service time of each customer in the teller system is 15 minutes, the number of tellers must be increased by 2 to 4 tellers so that the waiting time plus the average customer service time of each customer in the teller system becomes 7.5 minutes.

5.2. Suggestions

Some suggestions that can be put forward are:

1. 15 minutes is too long for customers to wait for tellers to serve this cannot be allowed because the bank will lose its customers, therefore managers need to find other means to improve the service, namely reducing the waiting time for customers by adding two tellers.
2. Maximize hourly service so that customers do not wait too long, this method will generate customer satisfaction and loyalty.

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Image: Photo of the Research Place on :

PT. BSG (Bank Sulut-Go) Kotamobagu Branch, 2022. The photo was taken in the morning.



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