Analysis of the Single Channel – Single Phase Teller Queuing System at Pt. Bank BJB KCP Gedebage Bandung

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Abstract: This study aims to determine the Single Channel - Single Phase Teller queuing system at PT. Bank BJB KCP Gedebage Bandung. Where there is a decrease in the percentage of queue visits in 2023 by 14.21%. Descriptive Qualitative Method by collecting data on the number of customer queue visits processed by the author, namely in the form of data on the number of customer queue visits in 2023 from January to December. The results showed that PT. Bank BJB KCP Gedebage has a queuing system machine called BJB SANTER (Integrated Customer Analysis System) which is carried out offline with features or services on the frontliner. BJB SANTER is done to pull data by Regional Office to monitor Teller performance, to ensure customer satisfaction. The author's suggestion is that PT. Bank BJB KCP Gedebage Bandung can implement a Multi Channel - Single Phase queuing system so that customers can be served simultaneously by several tellers, and can apply the BJB SANTER system can be accessed online via smartphone. So that it will be able to increase the number of customers, especially at PT. Bank BJB KCP Gedebage Bandung.

Keywords: Queuing System, Single Channel-Single Phase, Teller, Bank BJB

I. INTRODUCTION

The banking sector is a symbol of very rapid economic development and is also very influential for the State of Indonesia. Banking is a financial institution that provides services to the public/customers with the main function being financial management and economic development. Banking also provides savings, loans, transfers and payment services via virtual accounts with billing codes. According to the Book Banks and Financial Institutions, author Rusnawati states that a bank is a bank's business in collecting funds to finance its operations. Banks are financial institutions whose daily activities are in the field of buying and selling money. (Rusnawati, 2023.)

According to the Law of the Republic of Indonesia Number 4 of (2023.) concerning the development and strengthening of the financial sector article 8 No. 5, namely banking is everything about banks, includes institutions, business activities, as well as methods and processes for carrying out business activities conventionally and based on Sharia principles as intended in the law regarding banking and the law regarding Sharia banking. According to(Regulation of the Financial Services Authority (OJK) of the Republic of Indonesia Number 12/POJK.03/2021) regarding commercial banks In Article 1 paragraph 1 it is stated that banks are those that carry out conventional business activities in their activities providing services in payment traffic.

Based on Bank Indonesia Regulation Number 24/2/PBI/2022concerning macroprudential inclusive financing ratios for conventional commercial banks, sharia commercial banks and sharia business units. Article 1 No. 1 states that conventional commercial banks are commercial banks that carry out conventional business activities and in their activities provide services in payment traffic, including branch offices of banks located overseas. (PBI Number 24 of 2022.)Meanwhile, Sharia Commercial Banks are banks that carry out their business activities based on Sharia principles and in their activities provide services in payment traffic.(OJK Regulation No. 16/ POJK.03/2022)

Government Banks are banks owned by the government or under the government. As we know, West Java province is one of the provinces where every region, district and city has many banks. Bank BJB is called Bank Jabar Banten or Bank Jawa Barat dan banten which is a Badan Umum Milik Pemerintah Daerah (BUMD) belonging to the DPRD of West Java and Banten which is domiciled in the Bandung city area. Bank BJB was founded on May, 20 1961 as a limited liability company (PT), then with developments it changed its status to become a Badan usaha Milik Negara or so-called (BUMN). (Wulandari., 2022). To date, the Bank BJB has spread throughout the region including the city of Bandung, namely Bank BJB KCP Gedebage which is located at Jl. Soekarno Hatta, District. Gedebage. PT. Bank BJB KCP Gedebage is the object of research, which is located not far from the West Java Regional Police office and is surrounded by other companies and universities. PT. Bank BJB KCP Gedebage has many customers, and operates every day (Monday-Friday) from 08.00 – 15.00 WIB.

Each bank has different services or service quality. Service quality is one of the important determinants or things that are important for the success of a bank, but often service quality is very difficult to measure because of its unique characteristics. (Hamzah et al., n.d., 2019). Meanwhile, according to (Nunung., 2023), the characteristics of good service must be applied by employees tasked with serving customers, namely the availability of good employees who are able to serve quickly and precisely, are able to communicate well and can understand customer needs.

The role of banks in the service sector has an important role in improving service quality, because it can influence customer loyalty. According to (Primastika EA & Rusdianto RY, 2024.) Customer Loyalty can be interpreted as a customer's purchasing behavior in the form of loyal loyalty that a customer/consumer gives to a bank/company by purchasing products or services from the company/bank more than once or is said to be continuous and consistent..Even satisfied customers will be able to make repeat purchases in the future, in other words, in the future and tell others how they feel. Then in the next stage these loyal customers will expand their "loyalty" to other products made by the same manufacturer. In the end, they are consumers or customers who are loyal to producers or certain service providers forever.

One of the qualities of service is that it is used as a reference by several companies or also known as Service Quality Service quality has several dimensions, namely as follows:

1. Reliability namely the desire to provide services quickly to consumers and correctly and accurately. In terms of delivery, service, problem resolution and price, business actors can provide services as promised.
2. Responsivenees is the capacity to help consumers and provide fast and appropriate service in order to provide them with real and correct information.
3. Empathy, is to provide consumers with genuine, individual attention and self-service while seeking to understand their needs. For example, companies must know specific customer desires.
4. Anssuarance namely the politeness given by employees to customers to give customers a sense of trust in the bank.
5. Tangible namely the capacity of a business to show clients how far it can reach. in the form of physical buildings and organizational infrastructure, appearance and functional capabilities, and the condition of the immediate environment or it could also be called proof of the services provided. (Camelia Br Barus, 2024)

So that the quality service provided to customers/customers at the bank can provide a sense of satisfaction to customers. According to (Sulastri T & Selina., 2023). Customer satisfaction is the customer's expectations regarding the expected performance or quality of service, whether or not what is provided is in accordance with the customer's expectations. Based on the results of Tiris Sudrartono's 2021 research conducted at Bank BJB Wanaraja Garut, it is stated that quality of service and customer satisfaction can be measured using five dimensions: Tangible, Assurance, Responsiveness, dan Empathy. This model shows that the level of customer satisfaction is generally influenced by satisfaction with the characteristics of these five dimensions. Customer satisfaction will be achieved if there is a match between the level of significance and presentation or customer satisfaction. (Kurniyasih & Sudrartono, n.d., 2021)

Customers have a relationship with the bank to obtain financial services provided by the bank. There are two categories of customers in a bank, namely ordinary customers and priority customers. Ordinary customers in their daily transactions usually carry out general transactions such as transfer transactions and cash withdrawals. Meanwhile, priority customers are customers who are highly prioritized in terms of service because priority customers are in the upper class and have very complex businesses or investments, so priority customers need financial products/services that can be managed professionally.

In terms of queues, priority customers always take priority over regular customers, so priority customers do not need to queue with a queue number. The queuing process is a process where the arrival of customers will be continuous with a service facility. Based on research according to (Anisya Ramdani et al., n.d., 2021) states that arrival is a process in the queuing system to determine the probability distribution for the number of arrivals at a certain time. The process of customers arriving from one to another, it can be said that the timing cannot be predicted or is often unpredictable, which is called a random variable. In order to know the pattern of customer arrivals, the Poisson distribution can be visualized in the form of a fairly good model. In the results and discussion of the research (Syafira AIN &Maskur A., 2021.) To avoid piles of queues at a bank, namely by showing the response of the officers by greeting each customer so that there will be no build-up. According to (Sirait PR., & Gultom P., 2023.) Queues arise because service users are not properly attended to by service facilities so that users of these facilities cannot get service as quickly as possible. The number of service facilities will greatly influence a queue, as stated in research (Findayani et al., 2023) that a queue occurs due to

an imbalance in the ratio of the number of customers to the number of facilities provided. Waiting to be served is considered to cause customers to be frustrated, angry and anxious, the longer the customer believes that he is waiting in line, the worse the customer's assessment of the service received.

There are four (4) general basic queuing structure models that occur throughout the system (Suprapto, et al., 2020.) namely:

1. **Single Channel** – *Single Phase* (M/M/1) in the queue structure *Single Channel* This means that there is only one path to enter the service system or there is one service facility. And *Single Phase* indicates that there is only one service station. After receiving services, individuals exit the system. For example: a shop assistant, and so on.
2. **Single Channel** – *Multi Phase,* in term *Multi Phase* indicates that there are two or more than one service carried out sequentially. For example: mass production lines, car washers and car painters.
3. *Multi Channel- Single Phase* (M/M/S) is a system that occurs where there are two or more service facilities that are fed by a single queue. For example: in a bank queue with several tellers, purchasing tickets and passes served by several counters, payment by several cashiers, and others.
4. **Multi Channel** – *Multi phase* This system shows that each system has several service facilities at each stage so that more than one customer can be served simultaneously. For example: in patient services in hospitals which starts from the registration section, then diagnosis, medical treatment by doctors, to the payment section, and re-registration for new students at a university, and so on.

Table.1 Number of Customer Visits in 2023 per mounth for Teller service

No	Moon	Operational hour	Number of Teller	Number of Visits	Percentage (%)	Is
1.	January	08.00 – 15.00	1	1505	-	-
2.	February	08.00 – 15.00	1	1175	-21,9	Down
3.	March	08.00 – 15.00	1	1550	31,9	Up
4.	April	08.00 – 15.00	1	1560	0.65	Up
5.	May	08.00 – 15.00	1	1120	-28.2	Down
6.	June	08.00 – 15.00	1	1340	+19,6	Up
7.	July	08.00 – 15.00	1	1200	-10.4	Down
8.	August	08.00 – 15.00	1	1845	+53,7	Up
9.	September	08.00 – 15.00	1	1900	+2.9	Up
10.	October	08.00 – 15.00	1	1250	-34.2	Down
11.	November	08.00 – 15.00	1	1175	-6.0	Down
12.	December	08.00 – 15.00	1	1450	23.4	Up

Source: Data processed by researchers in 2024

Based on **table 1** It can be noted that working hours at the PT. Bank BJB KCP Gedebage Bandung start at 08.00 – 15.00. It can be seen that the number of customer visits in 2023 from January was 1505 to 1175 in February, experiencing a decrease with a percentage decrease of -21.9%. In March there was an increase in customer visits to 1550 compared to February with the percentage increase experienced in March being 31.9%. In March - April there will be an increase in customer queue visits, because that month is the month of fasting and Eid. Then from March to April there was a not too much increase from 1550 to 1560 with the number of customer visits increasing by 10, so the percentage in April was 0.65%. Furthermore, in May there was a decrease with the number of visits amounting to 1120 with a total percentage decrease of -28.2%. In June there was a quite large spike with the number of visits reaching 1340 with a percentage from May to June of 19.6%. Meanwhile, in July it experienced another decline of -10.4%. The increase was obtained again in August with a high jump in the number of queue visits of 1845 from the previous month, namely July with a number of visits of 1200, an increase of 625 with an increase percentage of 53.7%. This increase was experienced due to the tax payment due date which is made once a year. Based on the Regulation of the Minister of Finance of the Republic of Indonesia, a tax period is a period of time that is the basis for taxpayers to calculate, deposit and report tax payable within a certain period of time. (Regulation of the Minister of Finance of the Republic of Indonesia Number 38 of 2023.) In September there was an increase of 2.9%. In October there was another decline with a percentage decrease of -34.2%. In November there was another decline with customer visits amounting to 1175 from the previous month October, namely 1175 with a percentage of -6%. then in December it experienced an increase at the end of 2023 of 23.4%. It can be seen that the average decrease in customer visits was 14.21%. This decrease is thought to be due to a queuing system that is not optimal. To overcome this

problem, the author is interested in conducting research entitled Queuing System Analysis *Single Channel-Single Phase* Teller at PT. Bank BJB KCP Gedebage Bandung. With the aim of finding out the problem of decreasing visits through customer queues and looking for appropriate solutions so that the level of queue visits at the Bank BJB increases.

II. RESEARCH METHODS

This research uses a qualitative method, namely according to Harahap, 2020 in the book Qualitative Research Methods (Hasan M, et al., 2022), namely research whose targets are unlimited, but the content and data are unlimited. The more and more quality that is collected, the higher the quality of the research will be. Furthermore, to explain the phenomenon or problem explained through the descriptive method in the book Qualitative Research Methods (Nasution FA, 2023.) it is said that each type of analysis can be different, as said by Marry de Chesnay "each type of qualitative research requires slingthly different litethods of data analysis". This means that each type of qualitative research will use different analysis techniques. One level of qualitative data analysis is descriptive analysis. Descriptive qualitative research aims to understand the meaning and uniqueness of the object studied by the researcher and to understand social processes and interactions, by collecting data that has been collected by the researcher in the form of field notes, observation results, direct interviews with supervisors/managers or employees at a location. the company or bank, so that you will gain unique understanding, as well as new findings that are descriptive in nature. From the two statements in the book it can be concluded that the Descriptive Research method is a research method whose research is in the form of unlimited objects with numbers with data collection techniques through field notes, observation results, and interviews, so that the results will produce/obtain a unique understanding of the object being studied. by researchers.

This research method is assisted by data collection techniques with the object that is the population in this research, namely all customers of PT. Bank BJB KCP Gedebage, by collecting data and processing it by researchers, namely the number of customer queue visits to Tellers at PT. Bank BJB KCP Gedebage Bandung. By collecting the number of customer queue visits per/month from January to December 2023. And researchers conducted direct interviews with PT. Bank BJB KCP Gedebage Bandung, to obtain clear information and problems.

III. RESULT AND DISCUSSION

PT. Bank BJB KCP Gedebage Bandung has a large number of customers and has high loyalty to the services provided by Bank BJB KCP Gedebage. To maintain these loyal customers, Bank BJB has a way to improve excellent service to customers by implementing a queuing system, namely BJB SANTER (Integrated Customer Queuing System). BJB SANTER can be done online or offline for transactions at frontliners or at Teller services or Costumer Service, so that customers immediately have a queue number.

Based on the results of an interview with Mrs. Vany Yulistiani as supervisor/manager at PT. Bank BJB KCP Gedebage, she stated that BJB SANTER is a queuing system used to make things easier for customers, but at PT. Bank BJB KCP Gedebage BJB SANTER only uses one queuing system offline, with the service feature on the Teller there will be a choice of cash deposit or cash withdrawal, while on service costumer service there are many kinds, namely opening a new account, forgetting passwords and other things, resulting in a queue number for the teller coded A01, whereas at costumer service coded B01. BJB SANTER can generally be used online at other BJB branch offices, customers can even get a queue number without going to the branch office first so that the queue will not pile up when transactions are made.

The BJB SANTER queuing system will produce a questionnaire in the form of the level of service satisfaction that customers receive from a teller. When the customer is being served with a transaction, a teller will process the transaction with an average count Service Level Agreement (SLA) for withdrawal transactions will take approximately two and a half minutes. When it is finished, a monitor screen will appear requiring the customer to rate it using an assessment indicator with each point, namely Very Satisfied 100, Very Satisfied 80, Satisfied 60, Dissatisfied40, Very Dissatisfied Satisfied20, and Very Dissatisfied 0. Each of them has points starting from 100 to 0. When the customer clicks on one of them, it will produce an assessment for a teller regarding how he or she serves Bank BJB customers.

The Bank BJB Regional Office will collect the data by assessing each teller's performance at Bank BJB. When you get a value that is less than the minimum service, the branch office will make a call and impose sanctions on the tellers at the branch office. Regional offices or regional offices will record this data, which is called Customer Satisfaction Utilization on BJB SANTER Teller Machines. every month by producing evaluations to be better in improving service/services to customers.

The maintenance system in the BJB SANTER queue system service system is carried out with maintenan cash software periodically by the vendor who provides the queuing system machine from Neutronic Solution, which has been approved in advance with scheduled software maintenance based on the schedule preventive maintenance or regular maintenance incidental when available case damage reports, so that the queuing machine can always be used with the benefit of being able to centrally monitor queue conditions at each branch/sub-office location, and can help monitor the performance of frontliners, especially tellers, by looking atService Level Agreement (SLA) customer service, with regular monthly assessments, it will result in improving the best service to Bank BJB customers.

BJB SANTER Queuing Machines at other branch offices have implemented online features, by developing the concept hybrid banking which collaborates offline and online banking services. So that customers can fill in the queue number just by filling in the link wherever the customer is without having to first visit the Bank BJB branch office which makes the customer service queue more optimal with the hybrid banking feature, whereas at PT. Bank BJB KCP Gedebage the feature hybrid banking It cannot yet be implemented because there is only one queuing machine, and inadequate human resources (HR).

Then you can find out the problem at PT. Bank BJB KCP Gedebage Bandung has not yet maximized the BJB SANTER queuing system machine and causes a long queuing system because there is only one teller causing the queue to overflow and customers need to wait for the next queue to be longer, due to the system queue by using Single- Channel, Single Phase or it is called a service that is only carried out by one teller. In general, there are 4 discussions of queue structures, namely Metode Single Channel-Single phase where there is only one service route provided, Metode Single Channel-Multi Phase that is, it shows that there are two service lines or more than two. Then the three methods Multi Channel-Single phase where there are two or more services with several tellers, then there is a fourt Multi Channel – Multi Phase System Multi Channel – Multi Phase which causes many services to be served simultaneously.

The performance of a Teller is the main thing in increasing growth at PT. Bank BJB KCP Gedebage, this can be seen through how the teller carries out services to customers according to their standards, so that the customer feels very satisfied with being served and so that customers at PT. Bank BJB KCP Gedebage can always loyal, so that there will also be benefits for the Company or for the bank regarding income dividends who received. PT. Bank BJB KCP Gedebage always provides officer services frontliner well and maximally to customers and customers always provide value feedback or good feedback, it's just that what is not optimal is the BJB SANTER queuing system machine.

To anticipate this problem, it can be implemented using a non-single queuing system, by adding human resources (HR) to several tellers so that later there will be a unified queue structure. Multi Channel-Single Phase so that there is no decrease in data on the number of visits to the queuing system with the hope that it can be served by several tellers simultaneously. As well as implementin hybrid banking on the BJB SANTER machine and adding human resources to the queue machine officers so that the number of queue visits is higher and can produce a percentage increase from month to month thereby causing a positive impact by having a wider queue, and not limited to using the queue system as a whole online.

IV. CONCLUSION AND RECOMENDATION

Based on the research results, it can be concluded that PT. Bank BJB KCP Gedebage Bandung has a BJB SANTER queuing system which is not yet optimal with the existence of queue services *Single Channel-Single Phase* causing long queues and a decrease in the number of customer queue visits. To maintain the stability of the number of queue visits, the suggestion given is to implement a queue system *Multi Channel-Single Phase* so that these customers can be served simultaneously with several tellers, and apply other factors to the BJB SANTER Machine by utilizing the development of gadget technology which is now familiar, namely by implementing an online queuing system. The author's suggestion is that PT. Bank BJB KCP Gedebage Bandungapplies the BJB SANTER system which can be accessed via *smart phone*, thus customers with *real time* served by a teller. So that customers gain experience of being served well which in the end can increase the number of customers, especially at PT. Bank BJB KCP Gedebage Bandung and generally in the West Java and Banten regions.

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